DOCUMENT RESUME

ED 384 470 RC 020 173

TITLE	Cooperative Learning in Rural and Small Schools. Rural/Small Schools Network Information Exchange: Number 10, Spring 1991.
INSTITUTION	Regional Laboratory for Educational Improvement of the Northeast & Islands, Andover, MA.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE	91
CONTRACT	400-86-0005
NOTE	121p.; Photographs will not reproduce adequately.
PUB TYPE	Collected Works - General (020)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	*Cooperative Learning; *Educational Benefits; Elementary Secondary Education; Group Dynamics; Grouping (Instructional Purposes); Learning Strategies; Preschool Education; Program Descriptions; Public Relations; *Rural Education; *Small Group Instruction; *Teacher Role; *Teaching Methods; Teamwork

ABSTRACT

This packet includes reprints of journal articles and other resources pertaining to cooperative learning strategies in small, rural schools. The four sections of the packet cover introduction to cooperative learning, examples of how team strategies and cooperative learning can be used, issues such as program evaluation and public relations, and additional resources. Articles include: (1) "Cooperation Works!" (Dianne K. Augustine, Kristin D. Gruber, Lynda R. Hanson); (2) "Cooperative Learning: Making It Work"; (3) "Introducing Cooperative Learning" (Susan S. Ellis); (4) "Characteristics of a Collaborative Classroom" (excerpt from "Restructuring To Promote Learning in America's Schools"); (5) "Student Team Learning: An Overview and Practical Guide" (Robert E. Slavin); (6) "The Structural Approach to Cooperative Learning" (Spencer Kagan); (7) "Social Skills for Successful Group Work" (David W. Johnson, Roger T. Johnson); (8) Workshop handout, "Essentials of a Cooperative Lesson"; (9) "P is for Prosocial Teaching" (Alfie Kohn); (10) "Cooperative Learning Groups: Increasing Composite Time on Task" (Edna O. Schack, and others); (11) "Implementing Cooperative Learning Groups in the Writing Curriculum" (Ann Hill Duin); (12) "Creating a Caring Classroom Community" (Mike Perry, Nan Graves); (13) "Cooperative Learning: Instruction and Procedures To Assist Middle School Teachers" (Karen A. Bosch); (14) "Cooperative Learning: Developmentally Appropriate for Middle Level Students" (M. Gail Jones); (15) "Group Investigation Expands Cooperative Learning" (Yael Sharan, Shlomo Sharan); (16) "Experiences of Teachers Who Have Used Cooperative Learning" (Ruth Parker); (17) "Summer School: Promoting Cooperative Learning" (Twyla L. Bright); (18) "School Tries New System of Learning" (Elizabeth New Weld); (19) "Can Cooperative Learning Be Evaluated?" (Dan Watson, Lyle Rangel); and (20) "The Cooperative Link" (sample newsletter). Section 4 lists additional resources. (LP)

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ED 384 470

RURAL/SMALL SCHOOLS NETWORK
INFORMATION EXCHANGE

Number 10

SPRING 1991

COOPERATIVE LEARNING IN RURAL AND SMALL SCHOOLS

The Regional Laboratory
for Educational Improvement of the Northeast & Islands

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The Regional Laboratory
for Educational Improvement of the Northeast & Islands

Spring 1991

Dear Rural/Small School Leader:

We are pleased to send you **Cooperative Learning in Rural and Small Schools**, the Rural/Small Schools Network Information Exchange Packet Number 10. It is the first of two packets planned for Rural/Small Schools Network members during 1990-1991.

As always, this timely topic was determined by RSSN Planning Board members in response to our annual evaluation survey.

The packet is divided into four sections. The first section provides a general overview to the concept of cooperative learning and to the issues involved with its adoption. The second section is more strategic and focused on the classroom. It provides examples of how team strategies and cooperative learning may be used in the preschool through secondary levels. Section three looks at evaluation and public relations. Section four provides information on additional resources of particular interest to educators in rural and small schools.

We have enclosed an evaluation card so you can let us know how useful you found this information. We also welcome your suggestions for future Information Exchange Packet topics. Please jot any ideas you may have on the card or contact us at the Rural/Small Schools Network, 83 Boston Post Road, Sudbury, MA 01776, (508) 443-7991.

You may order additional copies at a cost of $15.00 plus $2.50 postage and handling. Please send orders directly to the Publications Department of The Regional Laboratory at 300 Brickstone Square, Suite 900, Andover, MA 01810, and cite order number 9080-09.

Sincerely,

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"Cooperative Learning: Making It Work," The Harvard Education Letter, November/December 1989, Volume V, Number 6.

"Introducing Cooperative Learning," by Susan S. Ellis, Educational Leadership, December 1989/January 1990.

"Characteristics of a Collaborative Classroom," Restructuring To Promote Learning In America's Schools, Chapter 3.

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"Student Team Learning: An Overview and Practical Guide," by Robert E. Slavin. Washington, DC: National Education Association, 1988, pp. 8-14, 19.

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Handout from the New England School Development Council Cooperative Learning Workshop given by Wende Brock, Portland, Maine, 1990.

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"Cooperative Learning Groups: Increasing Composite Time On Task," by Edna O. Schack, Lester E. Brown, Karla Behounek, Linda Rosenbaum, and Janet V. Burcalow, Catalyst for Change, Winter 1987.

"Implementing Cooperative Learning Groups in the Writing Curriculum," by Ann Hill Duin, Journal of Teaching Writing, Fall 1986.

"Creating a Caring Classroom Community," by Mike Perry and Nan Graves, Cooperative Learning, December 1990.

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"Experiences of Teachers Who Have Used Cooperative Learning," by Ruth Parker, Small-Group Cooperative Learning in the Classroom, Oregon School Study Council Bulletin, Vol.27, No.7.

"Summer School: Promoting Cooperative Learning," by Twyla L. Bright, NASSP Bulletin, May 1991.

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"Can Cooperative Learning be Evaluated?," by Dan Watson and Lyle Rangel, The School Administrator, June 1989.

The Cooperative Link, published by The Cooperative Learning Center, Vol 5 No 2, April 1989.

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INTRODUCTION TO COOPERATIVE LEARNING

DIANNE K. AUGUSTINE, KRISTIN D. GRUBER, AND LYNDA R. HANSON

Reprinted with permission from Educational Leadership, December 1989/January 1990.

Cooperation Works!

Cooperative learning can benefit all students, even those who are low-achieving, gifted, or mainstreamed.

With a combined total of 48 years in the classroom and 23 years using cooperative learning strategies, we are confident that cooperation works: it promotes higher achievement, develops social skills, and puts the responsibility for learning on the learner.

The three of us come from the ranks of the more than 30,000 teachers trained by Roger and David Johnson in the Cooperative Learning Center at the University of Minnesota. We have used cooperative learning in our 3rd, 4th, and 6th grade classrooms for many years, as do many of the teachers in our open-space elementary school. We also collaborate to train other teachers throughout the state of Minnesota in the use of the Johnsons' cooperative learning model.

Effects on Achievement

Each year, as we use cooperative learning in our own classrooms, we see improved achievement in a variety of curriculum areas. For example, Kristin has used heterogeneous cooperative groups in 3rd grade spelling for more than 10 years, and individual and class spelling scores have improved consistently over that time (see "Cooperative Spelling Groups").

In one case, Andy, a low-achieving student who received LD services, was failing social studies, health, and language early in the year. He needed constant supervision just to stay on task, paid little attention to classroom discussions, and seldom completed assignments. With a cooperative group to support and encourage him, however, Andy completed many assignments during class and brought back homework consistently. Soon he earned a "B" in health, a "C" in language, and his social studies average went up markedly. By mid-February, he was passing every subject; and he was able to maintain his grades for the rest of the year. From a dejected, isolated child at the beginning of the year, Andy became a cheerful, confident child whose achievement had improved dramatically by the end of the year.

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Photographs by Eric Augustine

Teachers Dianne Augustine, Kristin Gruber, and Lynda Hanson (left to right) believe strongly in the cooperative concept. They apply it in their work together and individually in their 6th (opposite page), 3rd (center), and 4th grade (right) classrooms at Dayton Elementary School in Minnesota.

Mainstreamed Students

Many mainstreamed students lack social skills and have low self-esteem. When they are placed in small heterogeneous cooperative groups and assigned specific roles, their achievement generally increases and their psychological health improves.

In one instance, Dianne placed Susan, a mainstreamed child, in a co-

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Cooperative Spelling Groups

Here is a procedure we recommend for using cooperative groups to teach spelling.

First, in order to collect data on individual spelling abilities, teach spelling in a traditional individualistic setting for three or four weeks. Then form heterogeneous triads including one high-, one average-, and one low-scoring speller. Triads then work together to study spelling for the rest of the year in the following fashion:

Day 1—Pretest. As teams sit together to take the pretest, they reach consensus on how to spell each word. Teams self-correct their pretests and note any troublesome words.

Day 2—Spelling games and activities. Teams choose from a variety of activities to study the unit words. For example, if teams "jigsaw" the words (Aronson et al. 1978), they divide word cards for the spelling unit equally among team members. Each student is responsible for studying his or her words and devising a strategy to teach the others how to remember those words.

Any spelling games or activities are appropriate—as long as the students perceive a group goal. Everyone must learn to spell all the words, and everyone must understand that she or he will be held individually accountable on the test.

Day 3—Practice test. Teams spend 5 minutes coaching each other in preparation for the test. Students take the practice test individually. After the test, teams reconvene (without pencils) to compare test papers. Teams tutor teammates who have misspelled words, then celebrate accurate papers.

Day 4—Study or free day. If all team members within a team have accurate practice tests, that team earns free time. If any team member(s) misspelled a word, the entire team uses this time to tutor the student(s).

Day 5—Final test. Teams spend 5 minutes coaching members who misspelled words on the practice test. These students retake the test individually. After the test, the entire team reconvenes (without pencils) to check test papers and praise each other's work.

Teams in which every member masters his or her required number of words receive a reward. If one team member fails to reach mastery, the team does not earn the reward. This reward system promotes positive interdependence: a feeling of "we're in this together, sink or swim" (Johnson et al. 1988). The combination of peer pressure and peer support creates an environment where students feel accountable to each other for learning spelling. In this motivated atmosphere, individual spelling scores have always improved in our classes—in some cases increasing from 40 percent accuracy to 100 percent accuracy.

—Dianne K. Augustine, Kristin D. Gruber, and Lynda R. Hanson

When mainstreamed students are placed in small cooperative groups, their achievement generally increases and their psychological health improves.

operative group to prepare for a social studies chapter test. The children understood that each member of the group needed to do well on the test: the group score would be the average of their four individual scores. Susan was having difficulty learning the information for her modified test. When the study time was over and Susan still had not mastered the material, her group members asked if they could stay in during recess to work with her until she was prepared. The next day, Dianne observed them quizzing Susan as soon as she arrived at school. When the tests were corrected, Susan and her teammates all received 100 percent. The children shouted for joy and complimented each other on their success.

Angela learned to be tactful with her classmates and made significant progress in sharing ideas and respecting others' opinions.

Gifted Students

Of course, gifted students and their parents are often skeptical of the benefits of cooperation. Let's look at a few situations that occurred in Lynda's 4th grade "gifted cluster" classroom.

Lynda's classroom is divided into five base groups. There are three pairs of students in each group. Lynda chooses the pairs very carefully, putting a high-achieving student with a lower-achieving student. Because students are paired, when an assignment is structured cooperatively, there are ready-made partners. Or Lynda can divide the six members of each base group into two triads, with heterogeneity assured. The base groups are kept together four to five weeks before being reassigned.

Some very unlikely friendships have come out of these partnerships. In one instance, Amy, a gifted student, and Scott, an average student, were assigned to one another. Theirs was a rocky relationship from the start. They insisted they hated each other, couldn't possibly work together, and even if they could, they wouldn't. Lynda decided to leave the pair together for an extended period.

Leaving pairs together has proved a very effective way of dealing with reluctant partners. The two students involved may not become the best of friends, but that's not necessary. Almost always, however, they develop respect for each other and an awareness of how to work together. Amy

and Scott became good friends. When Scott's family moved during the third quarter of the year, Amy was so upset she cried.

In another case, Angela, a gifted student, had always enjoyed school immensely. Early in the year, however, her parents contacted the school to question why Angela was being put into groups in which each person was dependent on the others to complete assignments. Angela was upset by these groups. She knew she could do the work faster alone. The parents' first concern was Angela's unhappiness. Why was she having trouble?

Lynda explained that Angela was having problems interacting with others when working in a cooperative pair or triad. Angela's father observed that Angela had always been successful at everything she'd attempted: she was a superior student and was outstanding in piano, gymnastics, and dance. But Angela had never found it necessary to work *with* anyone. He thought Angela had discovered something she did not excel at, and it made her uncomfortable. The parents agreed it would be to their daughter's benefit to learn how to interact in a positive way, even though she could admittedly do the assignments alone. They were also enthusiastic about the critical thinking the groups stimulated. They assured Lynda they would support her efforts; then they let Angela know they thought success in cooperative groups was important. As a result, Angela learned to be tactful with her classmates and made significant progress in sharing ideas and respecting others' ideas and opinions.

Jenny, another high-achieving student, was concerned that her grades might suffer because of the group work. Lynda offered to delete the cooperative scores from Jenny's average and give her the average of her individual scores. The results surprised both Jenny and her parents. Her average with all included was 97 percent, while her individual average, excluding the cooperative scores, was only 96 percent. (This is a typical result. Very seldom do cooperative assignments have a negative effect on student averages.)

But Jenny was uncomfortable with group work. When someone disagreed with her answer, she was afraid to speak up, fearing she might hurt their feelings. She simply allowed an incorrect answer to be recorded. Jenny's parents had originally asked that their daughter be excluded from cooperative groups because the experience was too traumatic for her. Eventually, however, they supported cooperative groups and agreed that being assertive enough to explain one's answers and stand up for one's point of view was a valuable skill to develop. Jenny learned, in the context of a cooperative group, to manage conflicts within her group more effectively.

Dramatic Changes

Implementing cooperative learning has dramatically changed our perception of teaching and learning. We now expect to see students in small heterogeneous groups discussing topics, using effective social skills, and—what's most important—caring about each other's learning.

If other educators believe as we do that higher achievement, increased acceptance of differences, improved attitudes toward school, and enhanced self-esteem are valuable goals for all children, then we all need to promote the continued use of cooperative learning. □

References

Aronson, E., N. Blaney, C. Stephan, J. Sikes, and M. Snapp. (1978). *The Jigsaw Classroom*. Beverly Hills, Calif.: Sage Publications.

Johnson, D.W., R.T. Johnson, and E. Holubec. (1988). *Cooperation in the Classroom*. Edina, Minn.: Interaction Book Company.

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Education Letter

Published by the Harvard Graduate School of Education in association with Harvard University Press

Volume V, Number 6 November/December 1989

Cooperative Learning: Making It Work

No longer just a topic for education journals, cooperative learning now appears in school-improvement plans and is even discussed on television talk shows. Whether the issue is racial and cultural diversity, mainstreaming of special education students, or how to develop critical thinking skills, cooperative learning is likely to be recommended. This approach has even found champions among political and business leaders, who emphasize how important it is for young people to learn the skills of teamwork before entering the workforce.

The basic idea is simple and differs profoundly from the typical teacher-centered format. In a cooperative classroom the teacher organizes the curriculum (or major parts of it) around tasks and projects that students carry out in small groups. The point is to create assignments and use grading and grouping procedures that give students a stake in one another's progress.

Proponents point to evidence, accumulated over nearly twenty years of research and practice, that cooperative learning works. David and Roger Johnson of the University of Minnesota and Robert Slavin of Johns Hopkins University have documented social, personal, and academic gains for learners of all ages. One central finding is that cooperative learning helps students become more accepting of classmates who are different. Also, researchers like Spencer Kagan of the University of California at Riverside have found evidence that black and Hispanic students learn particularly well in cooperative groups.

The work of bringing cooperative learning into our schools, however, moves slowly. Most educators have little experience with this approach. They were not taught this way themselves, nor did their professional training cover cooperative methods. And many teachers, while in favor of more cooperation in the classroom, doubt whether it will work at their grade level, for their subject matter, with their students.

Is cooperative learning likely to disappear into the gap between research and tradition? Not necessarily. The challenges, while very real, may not be insurmountable. A first step is to name the obstacles and assess the strategies suggested by both research and practice.

Teaching Social Skills

Obstacle 1: Kids do not know how to be productive and responsible group members. Some see groupwork as a chance to fool around. The ones who do get involved may end up resentful that they did all the work.

Proponents of cooperative learning see this as an argument *for* rather than against groupwork. They argue that being able to work as part of a team and to address conflict constructively are probably among the most important skills students can learn in school. In a recent survey, college graduates singled out these sorts of skills as ones that they needed most in adult life, but that had been least developed by their schooling.

But students will not necessarily learn these skills just by being placed in groups. As one principal noted, successful groupwork involves "a lot more than putting four desks together and handing out worksheets." In an article entitled "Collaborative Learning and Other Disasters," Richard Whitworth describes how he learned the hard

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way that he could not simply "set up detailed tasks for the students and then stand back." Instead, he found himself "constantly on the move: monitoring the group's progress, offering advice...demonstrating how to behave as a contributing member of the group."

There is evidence that black and Hispanic students learn particularly well in cooperative groups.

For groupwork to be beneficial, students must develop what Noreen Webb of the University of California identifies as "helping behaviors." Studying the dynamics of small groups, Webb found that the quality of interaction among group members determines whether they gain academically and socially. Specifically, she found gains in self-esteem and achievement when students offered one another explanations—not just answers—and when such help was given in response to specific requests.

This means, notes Webb, that teachers must be prepared to instruct students in behaviors such as how to ask for help (the art of asking open-ended questions), how to listen and probe, and how to give clear explanations that allow the listener to follow the thought process. She recommends a variety of ways to teach such skills—from modeling or demonstrating the desired behavior to having students role-play the behavior and critique one another's performance.

The Cooperative Link, the newsletter of the Cooperative Learning Center at the University of Minnesota, suggests that teachers assign specific roles to group members, a technique for encouraging what researchers call "positive interdependence." For example, one student becomes the "checker," who probes to see whether everyone can explain what the group has done. The "observer" records the group's activities, presenting his or her findings at the end of the time period ("I heard...," "I noticed..."). The "summarizer" keeps track of group decisions ("The main points are...").

By assigning such roles the teacher can distribute the work among members of the group. At the same time, students are forced to move out of their usual patterns. If, for example, a teacher casts the biggest talker as the observer, that student may realize how much better the group functions when no one member dominates.

Interdependence does not mean ignoring or discouraging conflict. As kids work together, arguments will occur about who is right or what the rules are. Such differences provide an opportunity to teach another crucial set of social skills—how to negotiate, consider solutions, and find workable compromises. While all of this takes time and practice, proponents describe immediate payoffs—in classroom climate and even in behavior on the playground—as students become more comfortable with their differences and better able to handle disagreements.

Modifying Ability Groups

Obstacle 2: Ability levels vary widely. Unless we group students by ability, an assignment that is challenging for some will be too easy for others.

Teachers often divide students into groups by ability level, giving different assignments to each group. But there is no persuasive evidence that this type of grouping benefits most students; in fact, some studies suggest that it may be detrimental, especially for those in low-ability groups (see *HEL*, July 1987).

Would heterogeneous grouping of students work better? In her studies of such groups, Webb found that high- and low-ability students benefited more than those in the middle. Students with a middle range of skills neither did much of the explaining nor were the ones who asked for help.

One solution, notes Webb, is to form groups with a narrower ability range—some groups of those with low to middle levels of skills, and some of those with middle to high levels. She also suggests paying attention to each child's profile of academic and social strengths in determining group composition, so as to try to give every child, at some time, the experience of being the most able member of a group.

"Teachers can't just read about cooperative learning; they have to experience it themselves."

Slavin and his colleagues have obtained promising results with a math curriculum called Team Accelerated Instruction (TAI), which uses both heterogeneous and homogeneous grouping. Students are members of home teams (which cross ability levels) and teaching teams (which consist of students at the same level). In their home teams, they explain problems to one another and check answers. Periodically, the teacher pulls together children who are at the same point in the curriculum to help them learn new concepts. They then return to their home teams to practice.

THE HARVARD EDUCATION LETTER (ISSN 8775-3701) is published bi-monthly for $21.00 per year by the Harvard Graduate School of Education, Longfellow Hall, Appian Way, Cambridge, MA 02138-3752, in association with the Harvard University Press. Second class postage paid at Boston, Massachusetts. POSTMASTER: Send address change to THE HARVARD EDUCATION LETTER, 79 Garden Street, Cambridge, MA 02138-1423.

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What Do They Learn?

Obstacle 3: Teaching students the social skills to be productive group members takes time—and this is time they are not using to learn the curriculum.

While most teachers believe social skills to be important, they do not want to sacrifice academic skills or content. But there is some evidence that the social aspects of groupwork may actually reinforce the academic ones. Studying pairs of fourth graders working at computers on a collaborative writing task, Colette Daiute of Harvard University found intriguing connections between how the children worked together and how a child's writing changed or improved.

Daiute analyzed each student's writing before and after the joint effort and then compared pairs of students in which both members became better writers with pairs in which neither did. She found that children in the improved pairs were more able to consider alternative wordings and to tolerate disagreement. These pairs also showed what Daiute calls playfulness in dealing with the task, using each other's words and ideas to push themselves creatively.

But what about the later grades, when more subjects must be learned and more complex skills mastered? As one high school teacher put it, "Getting into college is a competitive, not a cooperative venture." Supporters of cooperative learning can point to a number of studies indicating gains in achievement associated with properly structured groupwork. When the structure combines group goals with individual accountability, middle and high school students show significantly greater gains than peers learning the same material in a more traditional mode.

Researchers at Johns Hopkins have incorporated both of these elements into TAI and Student Team Achievement Divisions (STAD). Team members are tested individually after helping one another learn material the teacher has presented. Everyone has a stake in how much teammates learn, because the team score is the sum of the individual scores—and these are based on how much a student has improved, not on his or her absolute level of skill or knowledge. Slavin has found that this kind of teamwork raises achievement test scores across a range of subjects, age groups, and ability levels.

As kids work together, arguments will occur about who is right or what the rules are.

Proponents emphasize that groupwork not only is a good way to cover factual material or teach lower-level skills but also fosters critical thinking and problem-solving. When students explain concepts to one another, they confront differences of opinion and become aware of various viewpoints. The challenge for educators is to devise structures that encourage this kind of interchange.

In "jigsawing," a technique developed by Elliot Aronson of the University of California at Santa Cruz, students help one another understand complex material. In an eleventh-grade English class studying Homer's *Odyssey,* for example, the teacher assigns the first half to the whole class and then creates groups in which each member studies a different portion of the remaining text. Students leave their assigned groups to meet with others reading the same material; they discuss themes, metaphors, and allusions and explore ways to present these to their groups. Back in the original groups, each leads a discussion of his or her section of the story. In the end, group members demonstrate their understanding of the whole work through a project such as designing a study guide.

David and Roger Johnson have developed a format for helping students learn to think about controversial issues. The teacher divides the class into groups of four and then into pairs. The members of a pair are assigned to do research on a particular topic and argue opposing points of view. Midway through the exercise they switch roles, and each has to argue the other side. Then all four students distill the controversy into a collectively written report.

This kind of collaboration does take time, so that the class may cover less material, especially when students are first learning the techniques. But the Johnsons argue that whatever is lost in quantity is more than made up for in quality. When students take on different sides of a controversy, they learn that there is not always a clear right answer and that defining a problem well can be as important as finding a solution.

Overcoming the Obstacles

No one suggests that cooperative learning is appropriate for everyone or at all times. But the evidence does indicate that students would benefit both socially and academically if this approach became a part of every teacher's repertoire. The point is not to replace the competitive and individualistic modes of learning, but to put cooperative strategies at least on an equal footing with them. The question is how to make this happen.

"Teachers can't just read about cooperative learning; they have to experience it themselves and then experiment with it in their classrooms over a period of several years," notes Roy Smith, a Boston-area teacher trainer who studied with the Johnsons. To begin this process, Smith suggests a combination of school-based workshops, peer support, and expert coaching. "A teacher can overcome the obstacles alone, but cooperative strategies are more likely to take hold when a critical mass of teachers from a particular school get involved."

Wayne Bark is proud to be the principal of a "cooperative school"—the Overlook Elementary School in Maryland, which serves as a laboratory setting for curricula being developed by researchers at Johns Hopkins. Changing the mode of teaching and learning did at first place a burden on teachers. But, Bark notes, cooperative methods now relieve some of the pressures teach-

ers usually feel and ultimately make th[illegible]vork more satisfying: "No tea[illegible]r can make it interesting for all children, all the time. Cooperative learning is a vehicle, a way that teachers can grow and students can work at the edge of their ability."

For Further Information

Center for Research on Elementary and Middle Schools. Johns Hopkins University. 3505 North Charles St., Baltimore, MD 21218

E. Cohen. *Designing Groupwork: Strategies for the Heterogeneous Classroom*. New York: Teachers College Press, 1986.

Cooperative Learning Center. *The Cooperative Link*. 202 Pattee Hall, University of Minnesota, Minneapolis, MN 55455.

C. Daiute. "Play as Thought: Thinking Strategies of Young Writers." *Harvard Educational Review* 59, no. 1 (February 1989): 1–23.

D. Johnson, R. Johnson, and E. Holubec. *Structuring Cooperative Learning: Lesson Plans for Teachers*. Edina, MN: Interaction Book Co., 1987.

F. M. Newman and J. A. Thompson. *Effects of Cooperative Learning on Achievement in Secondary Schools: A Summary of Research*. Madison: National Center on Effective Secondary Schools, University of Wisconsin, 1987.

R. Slavin et al., eds. *Learning to Cooperate, Cooperating to Learn*. New York: Plenum Press, 1985.

R. Whitworth. "Cooperative Learning and Other Disasters." In J. Golub, ed., *Focus on Collaborative Learning*. Urbana, IL: National Council of Teachers of English, 1988.

Community Service for Youth?

Teenagers lead very busy lives. On average, they spend 25-30 hours each week in school, 5-10 hours on homework, and 15-25 hours at after-school jobs. Most other available hours go to what many consider the real work of adolescence—developing relationships with their peers.

Now political and educational leaders are asking teenagers to make another major commitment—to community service. A number of experiments are under way. Some schools and districts give academic credit for youth service, or require it for graduation; others have begun to weave service into the social studies curriculum or to encourage students to participate in city-wide or state-supported programs.

When Youths Initiate

Four high school students set up a weekend odd-job service for elderly residents of their town. Another group builds an aviary for a senior center and an aquarium for a nursing home. In another district, five students investigate the effects of Dutch elm disease in their community, eventually identifying a disease-resistant strain of elm, which they plant throughout the town.

These projects are among the many carried out by students participating in SerVermont, a youth-directed approach to community service. With the backing of a faculty member, any group of high school students can apply for a small grant to carry out a service project. The creativity of these young people in identifying and meeting community needs has made SerVermont a very popular—and inexpensive—program.

Youth initiative is also central to Fresh Force, a popular service program for junior high students in Minneapolis. Launched in 1986 by the mayor's office, the public schools, the United Way, and the Pillsbury Company, Fresh Force is a voluntary organization, with a board of directors composed of students from nine schools. Young people carry out neighborhood improvement projects with the aid of grants of up to $500. While students do not gain school credit, they do get public recognition at special events and through media coverage of their efforts.

"Once you get into it, and get over the barrier of doing it for free, you find you really like it."

Programs like these reward initiative and commitment. But when programs are voluntary, many young people do not join in: participation levels are generally reported to be less than 20 percent. Supporters of voluntary service argue that participants are more committed than they would be if the projects were required. Some worry that mandatory programs could dampen students' enthusiasm for volunteer service in the future. And from a practical point of view, it is easier to manage programs and monitor quality when fewer students are involved.

Requiring Service

The experience of Metro High School in St. Louis suggests that mandatory programs have their own advantages. Metro is a magnet school for above-average students, and its principal, Betty Wheeler, finds that many young people arrive thinking the city "owes them something." She views the service program—which has existed since the school opened 17 years ago—as a way of teaching them that they owe something back. "The more talent you have, the more responsibility you have to share," she tells her racially diverse student body.

The Metro program requires a substantial commitment: students must find their own placements and log 240 hours of service. Recently a group of volunteers designed a computer system for a unit at a children's hospital; other hospital volunteers have worked in laboratories, administered EKG tests, sterilized equipment, and supervised young patients. After spending two Sundays a month for two years escorting nursing home residents to religious services, one student said, "Once you get into it, and get over the barrier of doing it for free, you find you really like it."

Wheeler defends the compulsory nature of the program, asserting that the eventual positive experience outweighs any initial resistance. "Students are constantly being surprised," she says, "by the strong response they get for doing something simple."

SUSAN S. ELLIS

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Introducing Cooperative Learning

Six years' experience with cooperative learning has taught one district some valuable—and surprising—lessons.

The Greenwich, Connecticut, Public Schools have been providing training in cooperative learning to interested staff members since October 1983. Our original training design followed six steps (Ellis 1985):

1. Before asking teachers to commit themselves to an extensive training program, we offered them an overview of the theory and research behind cooperative learning and gave them practical, hands-on experience using the new strategy as well.
2. For those who elected to learn the new strategy, we provided training at regular intervals during the school year, on work time.
3. We ensured that in-school support from at least one peer and one administrator was available for each participant during and after initial training.
4. We provided visible and continuous district-level support (funds, coaching, encouragement) throughout training, implementation, and maintenance of the innovation.
5. As interest grew, we made expanded training opportunities available.
6. We developed training expertise within the school system.

Our six years of experience have taught us how best to follow these steps in practice—and have provided a few surprises.

Our experience with follow-up support suggests that many options can be effective.

Training and Support

We have found that teachers who elect to become trained in cooperative learning are already convinced of the value of the strategy and wish to jump into practical, how-to sessions immediately. Because we believe teachers should have a good understanding of the theory and research behind cooperative learning, we have not simply dispensed with that part of the training. Instead, we have incorporated that information into experiential sessions that simultaneously teach participants how to use the strategy.

Training schedules. During our six years, we have experimented with a variety of training schedules. When training sessions occurred two months apart, the sense of urgency was lost, and teachers put off practicing their new skills until shortly before they were to reconvene with the trainer. Half-days of training did not provide enough hands-on practice to give all participants sufficient confidence to try new skills in their classrooms. Two or three consecutive days of training

Teachers have told us that working with peers has made a crucial difference in their ability to learn to use cooperative learning.

overwhelmed some participants and left them feeling unable to assimilate all the new knowledge.

What has worked best for our initial training in cooperative learning is a total of four full days of released time with sessions occurring three or four weeks apart (Sparks 1983). This schedule provides a manageable "chunk" of new information, allows teachers sufficient time for practice between training sessions, and keeps enthusiasm and momentum high.

Follow-up support. While we recommend providing initial training on a particular schedule, our experience with follow-up support suggests that many options can be effective, including:

- half-day released time training sessions throughout the year,
- occasional after-school sharing and problem-solving sessions,
- visits to observe cooperative learning in action in other classrooms,
- a consultant's or colleague's observation of a teacher's use of cooperative learning, with feedback,
- planning or team-teaching a cooperative learning lesson with another teacher,
- access to a notebook of cooperative learning lessons developed by peers,
- paid time (during vacations) to develop cooperative learning lessons collaboratively with a colleague.

Not all participants have used all of these options; teachers select those that meet their needs or learning styles.

Local Support

Our original plan called for local support from two sources: a peer and the principal. Teachers came to the training in pairs or groups, so that each participant had at least one colleague with whom to share plans, problems, and successes. Each training session ended with time for the pairs or trios to plan how to support each other back at their school. Teachers have told us that working with peers has made a crucial difference in their ability to learn to use cooperative learning.

Principals and central office administrators attended training sessions that described what they should look for when observing cooperative learning lessons, how to provide positive feedback to teachers, and how to model cooperative learning in meetings. They also participated in the

Photographs by Deborah B. Wright

training sessions for teachers. Not surprisingly, in those schools where principals took an active role in promoting the use of cooperative learning, more teachers acquired the strategy, and more now use it regularly.

District-Level Support

To provide ongoing district-level support, we have sought to ensure:

- funds for consultants and for released time,
- identification of cooperative learning as an effective teaching practice to be pursued as a board of education priority,
- regular articles in the monthly staff development newsletter highlighting successful uses of cooperative learning,
- participation of central office administrators in training,
- encouragement from central office administrators, both to teachers using cooperative learning and to principals supporting it in their schools,
- use of cooperative learning groups by central office administrators in their own meetings.

What we did not anticipate was the logistical support needed from both central office and building administrators as people outside the district began to ask to observe cooperative learning in action. During the past four years, we have entertained editors from a variety of publications, teachers and administrators from as far away as Alaska and Arizona, and a videotaping crew from ASCD.

The time required to arrange these visits is justified, however, by the benefits our teachers derive from them. As one teacher observed, "Having visitors really keeps me on my toes and reminds me of all the elements of cooperative learning." And, of course, being complimented by visitors on their use of cooperative learning validates teachers' efforts to incorporate this strategy into their repertoires.

Expanded Opportunities for Training

When we began this project, we planned to offer training each year for three years, assuming that by then we would have reached everyone who was interested. Our biggest surprise has been the very gradual but continuous development of interest in cooperative learning among our staff members—so that we are still providing the basic training course seven years later!

A number of events have stimulated this interest, particularly the calls from researchers in many disciplines for the use of teaching strategies that promote

One pleasant surprise has been the emergence of leadership in some teachers who had not previously sought that role.

New Videos:
ASCD's *Cooperative Learning* Series

Developed in consultation with Robert Slavin, Roger Johnson, David Johnson, and Britt Vasquez, this five-tape comprehensive training program is intended for school faculties interested in implementing a successful cooperative learning program. Tapes 1–4 address the need for cooperation in the workplace, the basic elements of a successful program, the skills teachers and students need to thrive in a cooperatively structured classroom, and three generic models developed by Robert Slavin. Tape 5 is a complete lesson taught with cooperative learning (without narration). Available from ASCD in early 1990.

students' active engagement in their learning. For example, the new standards from the National Council of Teachers of Mathematics specifically advocate putting students into groups to do mathematics. Accordingly, five math teachers at Greenwich High School requested a training program in cooperative learning for the 1988–89 school year and persuaded most of their colleagues in the math department to join them.

Many teaching strategies designed to improve students' abilities to read and write—such as writing workshop, readers' workshop, or reciprocal teaching—also emphasize the importance of having students work together. As our teachers receive training in these strategies, those who have not studied cooperative learning recognize the need to participate in that training as well.

Finally, our transition to a middle school model has sparked interest in cooperative learning among former junior high teachers who see value in both the academic and the social skills that cooperative learning promotes. Moreover, our 7th grade interdisciplinary units are built on the concept of "interdependence"; several call for students to work in cooperative groups and to analyze both their effectiveness at working collaboratively and the advantages they derive from solving problems together.

In-District Expertise

While we had always planned to develop our own cooperative learning trainers, one pleasant surprise has been the emergence of leadership in some teachers who had not previously sought that role. Because we provide a variety of leadership opportunities (including facilitating sharing sessions, publishing lesson plans, and running workshops), many teachers have been able to earn recognition for their successes with cooperative learning. Some have elected to attend the Johnsons' Leadership Training Course and now provide week-long summer training sessions for the State of Connecticut as well as shorter sessions for schools in Greenwich and other districts.

Another Surprise

Initially we had been prepared for parental concern about cooperative learning. When a few parents questioned whether learning to cooperate would render their children unable to compete in the real world, we provided two evening workshops on cooperative learning for parents, explaining the importance of cooperative skills in the workplace and the need for students to acquire those skills in school.

Much to our surprise, six years later parental concern has surfaced again. (This time the questions tend to be, "Shouldn't the teacher be doing more teaching?" "How can my child learn from the other students?") Some parents of gifted children express fear that their youngsters will be held back by slower students in their groups. So once again we are providing a series of meetings for parents—with the advantage now of being able to use the ASCD videotapes about cooperative learning, two of which were made in our classrooms (see "New 'Cooperative Learning' Videotape").

The Most Important Lesson

The most important lesson we have learned over these six years is that cooperative learning is a valuable teaching strategy that more than repays teachers for the time and effort they must invest in learning to use it. The benefits for students, both academically and socially, can be great. We hope other educators will learn from our experiences and make their own implementations of cooperative learning even more effective than ours has been.□

Tips on Implementing Cooperative Learning

Our major discoveries from our long-term investment in cooperative learning are simple:

- Once the idea takes hold, teachers want practical, how-to instruction. They prefer theory and research to be built into the hands-on sessions, not imposed up front.
- Teachers need regular released-time training and continued follow-up support if they are to acquire and use this complex new teaching strategy.
- The more follow-up support teachers have, the more they use the new techniques.
- Success can lead to fame, which can lead to lots of visitors. Arranging for visitors takes time, but the gains in teacher self-confidence and commitment to the new strategy are worth the time spent.
- "Stars" will emerge where you may not expect them.
- Voluntary change can take twice as long as you think it will—or more.
- Parents need training, too.

—Susan S. Ellis

References

Ellis, S. (1985). "Introducing Cooperative Learning Groups: A District-Wide Effort." *Journal of Staff Development* VI: 52–59.

Sparks, G.M. (November 1983). "Synthesis of Research on Staff Development for Effective Teaching." *Educational Leadership* 43: 46–53.

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Characteristics of a Collaborative Classroom

Collaborative classrooms seem to have four general characteristics. The first two capture changing relationships between teachers and students. The third characterizes teachers' new approaches to instruction. The fourth addresses the composition of a collaborative classroom.

1. Shared knowledge among teachers and students

In traditional classrooms, the dominant metaphor for teaching is the teacher as information giver; knowledge flows only one way from teacher to student. In contrast, the metaphor for collaborative classrooms is shared knowledge. The teacher has vital knowledge about content, skills, and instruction, and still provides that information to students. However, collaborative teachers also value and build upon the knowledge, personal experiences, language, strategies, and culture that students bring to the learning situation.

Consider a lesson on insect-eating plants, for example. Few students, and perhaps few teachers, are likely to have direct knowledge about such plants. Thus, when those students who do have relevant experiences are given an opportunity to share them, the whole class is enriched. Moreover, when students see that their experiences and knowledge are valued, they are motivated to listen and learn in new ways, and they are more likely to make important connections between their own learning and "school" learning. They become empowered. This same phenomenon occurs when the knowledge parents and other community members have is valued and used within the school.

Additionally, complex thinking about difficult problems, such as world hunger, begs for multiple ideas about causes, implications, and potential solutions. In fact, nearly all of the new curricular goals are of this nature—for example, mathematical problem-solving—as are new requirements to teach topics such as AIDS. They require multiple ways to represent and solve problems and many perspectives on issues.

2. Shared authority among teachers and students

In collaborative classrooms, teachers share authority with students in very specific ways. In most traditional classrooms, the teacher is largely, if not exclusively, responsible for setting goals, designing learning tasks, and assessing what is learned.

Collaborative teachers differ in that they invite students to set specific goals within the framework of what is being taught, provide options for activities and assignments that capture different student interests and goals, and encourage students to assess what they learn. Collaborative teachers encourage students' use of their own knowledge, ensure that students share their knowledge and their learning strategies, treat each other respectfully, and focus on high levels of understanding. They help students listen to diverse opinions, support knowledge claims with evidence, engage in critical and creative thinking, and participate in open and meaningful dialogue.

Suppose, for example, the students have just read a chapter on colonial America and are required to prepare a product on the topic. While a more traditional teacher might ask all students to write a ten-page essay, the collaborative teacher might ask students to define the product themselves. Some could plan a videotape; some could dramatize events in colonial America; others could investigate original sources that support or do not support the textbook chapter and draw comparisons among them; and some could write a ten-page paper. The point here is twofold: (1) students have opportunities to ask and investigate questions of personal interest, and (2) they have a voice in the decision-making process. These opportunities are essential for both self-regulated learning and motivation.

3. Teachers as mediators

As knowledge and authority are shared among teachers and students, the role of the teacher increasingly emphasizes mediated learning. Successful mediation helps students connect new information to their experiences and to learning in other areas, helps students figure out what to do when they are stumped, and helps them learn how to learn. Above all, the teacher as mediator adjusts the level of information and support so as to maximize the ability to take responsibility for learning. This characteristic of collaborative classrooms is so important, we devote a whole section to it below.

4. Heterogeneous groupings of students

The perspectives, experiences, and backgrounds of all students are important for enriching learning in the classroom. As learning beyond the classroom increasingly requires understanding diverse perspectives, it is essential to provide students opportunities to do this in multiple contexts in schools. In collaborative classrooms where students are engaged in a thinking curriculum, everyone learns from everyone else, and no student is deprived of this opportunity for making contributions and appreciating the contributions of others.

Thus, a critical characteristic of collaborative classrooms is that students are not segregated according to supposed ability, achievement, interests, or any other characteristic. Segregation seriously weakens collaboration and impoverishes the classroom by depriving all students of opportunities to learn from and with each other. Students we might label unsuccessful in a traditional classroom learn from "brighter" students, but, more importantly, the so-called brighter students have just as much to learn from their more average peers. Teachers beginning to teach collaboratively often express delight when they observe the insights revealed by their supposedly weaker students.

Thus, shared knowledge and authority, mediated learning, and heterogenous groups of students are essential characteristics of collaborative classrooms. These characteristics, which are elaborated below, necessitate new roles for teachers and students that lead to interactions different from those in more traditional classrooms.

Teacher Roles in a Collaborative Classroom

Across this nation, teachers are defining their roles in terms of mediating learning through dialogue and collaboration. While mediation has been defined in different ways by Reuven Feuerstein, Lev Vygotsky and others, we define mediation here as facilitating, modeling, and coaching. Most teachers engage in these practices from time to time. What is important here is that these behaviors (1) drive instruction in collaborative classrooms, and (2) have specific purposes in collaborative contexts.

Facilitator Facilitating involves creating rich environments and activities for linking new information to prior knowledge, providing opportunities for collaborative work and problem solving, and offering students a multiplicity of authentic learning tasks. This may first involve attention to the physical environment. For example, teachers move desks so that all students can see each other, thus establishing a setting that promotes true discussion. Teacher may also wish to move their desks from the front of the room to a less prominent space.

Additionally, teachers may structure the resources in the classroom to provide a diversity of genres and perspectives, to use and build upon cultural artifacts from the students' homes and communities, and to organize various learning activities. Thus, a collaborative classroom often has a multiplicity of projects or activity centers using everyday objects for representing numerical information in meaningful ways and for conducting experiments that solve real problems. These classrooms also boast a rich variety of magazines, journals, newspapers, audiotapes, and videos which

allow students to experience and use diverse media for communicating ideas. In Video Conference 1, for example, students were shown investigating science concepts using everyday materials, such as paper and straw, found in their neighborhoods.

Facilitating in collaborative classrooms also involves people. Inside the classroom, students are organized into hetergeneous groups with roles such as Team Leader, Encourager, Reteller, Recorder, and Spokesperson. (See Elizabeth Cohen's work for further elaboration.) Additionally, collaborative teachers work to involve parents and community members. Examples are: A workshop center in New York invites parents to come and experience the thinking processes involved in conducting experiments using everyday objects so that they can provide such learning experiences at home (Video Conference 1); teachers in Tucson involve parents and the community in academic tasks their students engage in (Video Conference 3), and rural students in Colorado perform community services such as producing a local newspaper (Video Conference 5).

Another way that teachers facilitate collaborative learning is to establish classrooms with diverse and flexible social structures that promote the sort of classroom behavior they deem appropriate for communication and collaboration among students. These structures are rules and standards of behaviors, fulfilling several functions in group interaction, and influencing group attitudes. Particular rules depend, of course, on the classroom context. Thus, teachers often develop them collaboratively with students and review or change them as needed. Examples of rules are giving all members a chance to participate, valuing others' comments, and arguing against (or for) ideas rather than people. Examples of group functions are: asking for information, clarifying, summarizing, encouraging, and relieving tension. To facilitate high quality group interaction, teachers may need to teach, and students may need to practice, rules and functions for group interaction.

Finally, teachers facilitate collaborative learning by creating learning tasks that encourage diversity, but which aim at high standards of performance for all students. These tasks involve students in high-level thought processes such as decision making and problem solving that are best accomplished in collaboration. These tasks enable students to make connections to real-world objects, events, and situations in their own and an expanded world, and tap their diverse perspectives and experiences. Learning tasks foster students' confidence and at the same time, are appropriately challenging.

Model Modeling has been emphasized by many local and state guidelines as sharing one's thinking and demonstrating or explaining something. However, in collaborative classrooms, modeling serves to share with students not only what one is thinking about the content to be learned, but also the process of communication and collaborative learning. Modeling may involve thinking aloud (sharing thoughts about something) or demonstrating (showing students how to do something in a step-by-step fashion).

In terms of content, teachers might verbalize the thinking processes they use to make a prediction about a scientific experiment, to summarize ideas in a passage, to figure out the meaning of an unfamiliar word, to represent and solve a problem, to organize complicated information, and so on. Just as important, they would also think aloud about their doubts and uncertainties. This type of metacognitive thinking and thinking aloud when things do not go smoothly is invaluable in helping students understand that learning requires effort and is often difficult for people.

With respect to group process, teachers may share their thinking about the various roles, rules, and relationships in collaborative classrooms. Consider leadership, for example. A teacher might model what he or she thinks about such questions as how to manage the group's time or how to achieve consensus. Similarly, showing students how to think through tough group situations and problems of communication is as invaluable as modeling how to plan an approach to an academic problem, monitoring its progress, and assessing what was learned.

A major challenge in mediating learning is to determine when it is appropriate to model by thinking aloud and when it is useful to model by demonstrating. If a teacher is certain that students have little experience with, say, a mathematical procedure, then it may be appropriate to demonstrate it before students engage in a learning task. (This is not to say that the teacher assumes or states that there is only one way to perform the procedure. It is also important to allow for individual variations in application.) If, on the other hand, the teacher believes students can come up with the procedure themselves, then he or she might elect to ask the students to model how they solved the problem; alternatively the teacher could give students hints or cues. (See below.)

Coach Coaching involves giving hints or cues, providing feedback, redirecting students' efforts, and helping them use a strategy. A major principle of coaching is to provide the right amount of help when students need it—neither too much nor too little—so that students retain as much responsibility as possible for their own learning.

For example, a collaborative group of junior high students worked on the economic development of several nations. They accumulated a lot of information about the countries and decided that the best way to present it was to compare the countries. But they were stymied as to how to organize the information so they could write about it in a paper, the product they chose to produce. Their teacher hinted that they use a matrix—a graphic organizer they had learned—to organize their information. When the group finished the matrix, the teacher gave them feedback. In so doing, he did not tell them it was right or wrong, but asked questions that helped them verbalize their reasons for completing the matrix as they did. The principle the teacher followed was to coach enough so that students could continue to learn by drawing on the ideas of other group members.

Student Roles in a Collaborative Classroom

Students also assume new roles in the collaborative classroom. Their major roles are collaborator and active participator. It is useful to think how these new roles influence the processes and activities students conduct before, during, and after learning. For example, before learning, students set goals and plan learning tasks; during learning, they work together to accomplish tasks and monitor their progress; and after learning, they assess their performance and plan for future learning. As mediator, the teacher helps students fulfill their new roles.

Goal setting Students prepare for learning in many ways. Especially important is goal setting, a critical process that helps guide many other before-, during-, and and after-learning activities. Although teachers still set goals for students, they often provide students with choices. When students collaborate, they should talk about their goals. For example, one teacher asked students to set goals for a unit on garbage. In one group, a student wanted to find out if garbage is a problem, another wanted to know what happens to garbage, a third wanted to know what is being done to solve the problem of garbage. The fourth member could not think of a goal, but agreed that the first three were important and adopted them. These students became more actively involved in the unit after their discussion about goals, and at the end of the unit, could better evaluate whether they had attained them.

Designing Learning Tasks and Monitoring While teachers plan general learning tasks, for example, to produce a product to illustrate a concept, historical sequence, personal experience, and so on, students assume much more responsibility in a collaborative classroom for planning their own learning activities. Ideally, these plans derive in part from goals students set for themselves. Thoughtful planning by the teacher ensures that students can work together to attain their own goals and capitalize on their own abilities, knowledge, and strategies within the parameters set by the teacher. Students are more likely to engage in these tasks with more purpose and interest than in traditional classrooms.

Self-regulated learning is important in collaborative classrooms. Students learn to take responsibility for monitoring, adjusting, self-questioning, and questioning each other. Such self-regulating activities are critical for students to learn today, and they are much better learned within a group that shares responsibility for learning. Monitoring is checking one's progress toward goals. Adjusting refers to changes students make, based on monitoring, in what they are doing to reach their goals. For example, a group of students decided that the sources of information on the Civil War they selected initially were not as useful as they had hoped, so they selected new materials. Another group judged that the paper they had planned to write would not accomplish what they thought it would the way they had organized it, so they planned a new paper.

Students can further develop their self-regulating abilities when each group shares its ideas with other groups and gets feedback from them. For example, in the first video conference, elementary students were shown collaborating in small groups to define and represent math problems. Working in small groups, the children determined what was being asked in story problems and thought of ways to solve the problems. Then each group shared its ideas with the whole class. Members of the class commented on the ideas. As students developed problem-solving skills with feedback from other groups, they learned more about regulating their own learning which they could use in the future.

Assessment While teachers have assumed the primary responsibility for assessing students' performance in the past, collaborative classrooms view assessment much more broadly. That is, a major goal is to guide students from the earliest school years to evaluate their own learning. Thus, a new responsibility is self-assessment, a capability that is fostered as students assess group work.

Self-assessment is intimately related to ongoing monitoring of one's progress toward achievement of learning goals. In a collaborative classroom, assessment means more than just assigning a grade. It means evaluating whether one has learned what one intended to learn, the effectiveness of learning strategies, the quality of products and decisions about which products reflect one's best work, the usefulness of the materials used in a task, and whether future learning is needed and how that learning might be realized.

Collaborative classrooms are natural places in which to learn self-assessment. And because decisions about materials and group performance are shared, students feel more free to express doubts, feelings of success, remaining questions, and uncertainties than when they are evaluated only by a teacher. Furthermore, the sense of cooperation (as opposed to competition) that is fostered in collaborative work makes assessment less threatening than in a more traditional assessment situation. Ideally, students learn to evaluate their own learning from their experiences with group evaluation.

Interactions in a Collaborative Classroom

The critical role of dialogue in collaborative classrooms has been stressed throughout this **Guidebook**. The collaborative classroom is alive with two-way communication. A major mode of communication is dialogue, which in a collaborative classroom is thinking made public. A major goal for teachers is to maintain this dialogue among students.

Consider examples of interactions in collaborative groups. Members discuss their approaches to solving a math problem, explain their reasoning, and defend their work. Hearing one student's logic prompts the other students to consider an alternative interpretation. Students are thus challenged to re-examine their own reasoning. When three students in a group ask a fourth student to explain and support her ideas, that is, to make her thinking public, she frequently examines and develops her concepts for herself as she talks. When one student has an insight about how to solve a difficult problem, the others in the group learn how to use a new thinking strategy sooner than if they had worked on their own. Thus, students engaged in interaction often exceed what they can accomplish by working independently.

Collaborative teachers maintain the same sort of high-level talk and interaction when a whole class engages in discussion. They avoid recitation, which consists primarily of reviewing, drilling, and quizzing; i.e., asking questions to which the answer is known by the teacher and there is only one right answer. In true discussion, students talk to each other as well as to the teacher, entertain a variety of points of view, and grapple with questions that have no right or wrong answers. Sometimes both students and the teacher change their minds about an idea. In sum, interactions in whole group discussion mirror what goes on in small groups.

Still a third way interactions differ in collaborative classrooms has been suggested above. Teachers, in their new roles as mediators, spend more time in true interactions with students. They guide students' search for information and help them share their own knowledge. They move from group to group, modeling a learning strategy for one group, engaging in discussion with another, giving feedback to still another.

Challenges and Conflicts

When teachers and schools move from traditional to collaborative instruction, several important issues are likely to arise. They are important concerns for teachers, administrators, and parents.

Classroom Control Collaborative classrooms tend to be noisier than traditional classrooms. This is a legitimate issue for a number of people. Some teachers believe that noisy classrooms indicate lack of discipline or teacher control. In such situations, they argue, students cannot learn.

Earlier in this essay we stressed that collaborative classrooms do not lack structure. Indeed, structure becomes critical. Students need opportunities to move about, talk, ask questions, and so on. Thus, we argue that the noise in a smoothly running collaborative classroom indicates that active learning is going on. However, students must be taught the parameters within which they make their choices. Rules and standards must be stressed from the beginning, probably before any collaboration is initiated, and reviewed throughout a school year.

Preparation Time for Collaborative Learning Teachers and administrators may believe that new lesson plans must be formed for these classrooms. To a certain extent, they are correct. But many teachers already have created engaging units and activities that are easily implemented in a collaborative classroom. Furthermore, teachers can begin slowly, making changes in one subject area or

unit within a subject area, probably one they are already very comfortable teaching, and then add other subjects and units. Teachers can also share their plans with each other. Indeed, if we expect students to collaborate, we should encourage teachers to do the same! Principals and curriculum specialists can also collaborate with teachers to plan effective segments of instruction. Moreover, there is a tradeoff between the extra planning time needed and benefits such as less time correcting lessons, increased student motivation, and fewer attendance and discipline problems.

Individual Differences Among Students We have touched on this concern in the section on heterogeneous grouping. Nevertheless, many people will still doubt that individual differences can be better addressed in collaborative classrooms than in traditional classrooms with homogeneous grouping.

A major question people have concerns the advantage collaboration affords gifted or high-achieving students. There are two tough issues here. First, many teachers do not believe that low-achieving students have much to contribute to the learning situation; in effect, that they have no prior experiences or knowledge of value. Second, teachers worry that high-achieving students will be held back.

In response to the first issue, many collaborative teachers have expressed surprise when seemingly less-able students had insights and ideas that went way beyond what teachers expected. Further, if each student contributes something, the pool of collective knowledge will indeed be rich. In answer to the second concern, data suggest that high-achieving students gain much from their exposure to diverse experiences and also from peer tutoring (e.g., Johnson and Johnson, 1989). Also, students who may be high achieving in one area may need help in other areas.

Teachers and others also wonder whether shy students can fully participate in a classroom that depends so much on dialogue. We suggest that these students might feel more comfortable talking in small groups that share responsibility for learning. Furthermore, interaction between learners can happen in ways other than oral dialogue, for example, writing and art.

A related concern is that many schools are structured homogeneously so that an individual teacher cannot form heterogeneous groups without involving changes in the entire school. A whole class of "low" readers are taught by one teacher, "average" by another. High school tracks are even more systematically entrenched. Clearly, these practices are not conducive to collaborative learning and require system-wide restructuring. Individual teachers or groups of teachers can initiate dialogue on the problem, however.

Individual Responsibility for Learning This concern is a difficult one to solve unless major changes in other areas of schooling are also undertaken. Students are used to being graded for individual work; parents expect to know how their students fare in school. School staff and state departments depend on traditional assessments. In collaborative classrooms, it is often difficult to assign individual grades. Some teachers give group grades, but many students and parents are uncomfortable with these.

Ideally, assessment practices should be changed so that they are consistent with collaboration, with a new view of learning and with a thinking curriculum. Video Conference 4 addresses recent research and practice on assessment. In the meantime, effective ways have been developed whereby individual students can be evaluated in collaborative classrooms. For example, David Johnson and Roger Johnson, as well as Robert Slavin, advise making individuals responsible for subtasks in group work and then determining both group and individual grades.

Conflict of Values Susan Florio-Ruane has observed that many teachers do not feel comfortable allowing students to initiate dialogue, determine topics, or explore perspectives other than the teacher's. This reluctance conflicts with the way effective caregoers teach their children in the home. Florio-Ruane and others, such as Annemarie Palincsar, have found that teachers often have difficulty helping students construct meaning, especially linking the new information to the prior knowledge and culture of the students. In part this is because many teachers believe that their role is to transmit knowledge; in part it is because they are held accountable for teaching discrete skills. In one poignant example, a student teacher's concern for grammar and punctuation prevented her from seeing the sophistication and meaning in what the child was actually communicating in a book report.

The reluctance people feel when asked to make major changes in the way they do things is clearly the most serious issue of those discussed here. Hardly a person exists who eagerly gives up familiar ways of behaving to attempt something that is unknown and is likely to have many challenges of implementation.

This problem requires leadership, support, and time to address. Staff development needs to address teachers' concerns. We urge that educators first examine their assumptions about learning and then consider new curriculum guidelines. There is an intimate relationship among one's definition of learning, one's view of the content and scope of curricula, and instructional practices. Examining one's assumptions honestly and forthrightly, in a supportive group, often spurs educators to change. The already-convinced must allow time for the less-convinced to reflect and grapple with implications for the views expressed in this **Guidebook**. They must also accept the possibility that some educators may not change. We are urging that students be treated with such respect; we must urge the same respect for adults.

Finding Mathematical Patterns Mathematics is full of opportunities for students to collaborate on tasks that require complex thinking. Well-designed problems require interpretation, allow for multiple solution strategies, and have solutions that can be debated, extended, and generalized to other contexts. Thomas Good and his colleagues at the University of Missouri-Columbia have identified exemplary practices in small-group mathematics instruction.

As an illustration, they summarize a lesson developed by a third-grade teacher. She began the lesson by asking the whole class all the different ways of writing 3 as a sum (for example, 1 + 1 + 1, 2 + 1, 3 + 0). She wrote the responses on the board and noted the number of possibilities. She then asked students to work in pairs to identify all the ways to make sums of 4. The teacher encouraged the students to confer and pool solutions to determine whether they had found all possible solutions. Next she asked small groups of students to consider the number 5. Before the groups started, she asked them to predict how many solutions there would be. With enthusiasm and excitement, the groups competed to find the greatest number of solutions, and much task-related conversation ensued. The teacher then led a follow-up discussion, asking each group to describe the system it had used to generate possible solutions. The class then decided which system they thought was best.

The teacher then helped students look for patterns in the numbers of solutions for 3, 4, and 5. Next, she asked them to use their "best" system to generate all possible patterns for the number 6. Again, she asked if a pattern was apparent and if they could use it to predict solutions for the number 7. Several suggestions were made, but no conclusions agreed on. She ended by encouraging students to think more about this problem.

Application in Mathematics. As part of the University of Chicago School Mathematics Project, a complete mathematics curriculum has been developed for average students in grades 7-12. Development of this curriculum, which began in 1983, is under the direction of Zalman Usiskin and Sharon Senk, and has involved school personnel at every stage of planning, writing, and testing. The curriculum aims to prepare students for an age in which mathematics has an integral role in contemporary issues, communication, and commerce, as well as its traditional role in science, engineering, and technology. Curricular content focuses on using mathematics to solve real-world problems.

For example, instead of being asked to find a solution to an abstract "problem" such as 400 divided by 11.3, students might be asked, "Suppose a car goes 400 miles between gas fill-ups and it takes 11.3 gallons to fill up the tank. What has been the mileage per gallon?" In classes where this question is asked and the answer (about 35.4 miles per gallon) is found, there are natural questions such as: "Why is this number important?" "Is this possible - do cars get this much mileage? If so, what cars do?" "What is a good gas mileage these days?" "How much less gas would be used on a 10,000-mile trip by a car averaging 35 miles per gallon than a car averaging 25 miles per gallon? How much less would it cost?"

This emphasis on using mathematics to solve real-world problems forces the curriculum to make use of technology. The use of technology—in this case, a calculator - enables the teacher and students to be more efficient in using math to solve problems, freeing up the time formerly spent in calculation for solving additional problems relevant to students' lives. In the School Mathematics Project, scientific calculators are required in all courses because they are available to almost anyone who uses mathematics in the world outside of school. Computer work is recommended in all courses and is required in one advanced course because the content—functions and statistics—is not covered adequately today unless one has automatic graphic and data handling capabilities.

In these ways, instruction is changed not because of an a priori decision to use collaborative groups or cooperative learning, but because the content and technology lend themselves to discussion and teamwork. Students are usually not satisfied merely with a right/wrong answer to an interesting problem; they wish to discuss it, they want to share their methods of solution, and they want to know whether others thought the same way. One of the salient findings from the testing of this curriculum is that students no longer ask, "How does this topic apply to the real world?" or "Why am I studying this?"

In the algebra curriculum, Usiskin and Senk have included only those "word problems" that show the importance of mathematics in today's world. The curriculum developers point out the pitfalls of problems such as the following, often found in algebra texts: "Reversing the two digits in the cost of an item, a salesperson overcharges a customer by 27 cents. If the sum of the digits was 15, what was the original cost of the item?" Such problems violate two principles of application of mathematics. First, they are reverse given-find, in that one has to know the answer before one can make up the question. In the real world, one would never solve a problem for which one already as solution. Second, such problems are easier to solve with arithmetic than algebra. Usiskin, Senk, and the teachers they work with believe it is because of these two weaknesses that such "word problems" are viewed with such antipathy that many students ask why they are studying the subject. Mathematics, Usiskin, points out, has been invented to do things more easily, not to make things more difficult.

The School Mathematics Project teaches algebraic concepts using real-world problems. For example, linear equations are taught with a wide variety of constant increase or constant decrease problems, such as, "The population of the province of Quebec in Canada was 6,398,000 in 1980. If the population is increasing by 40,000 people per year, find an equation relating the population to the year." An example of a linear combination problem is: "If you eat a quarter-pounder which has 80 calories per ounce, how many 111-calorie French fries can you eat if you don't want your lunch to exceed 500 calories?" An example involving data that needs a line graph is: "Given the latitudes and mean April temperatures of some cities in the northern hemisphere, find an equation approximately relating latitude and temperature. Graph this equation. Explain why the point for Mexico City falls far from the line." Similar problems are used to teach other concepts in algebra and other courses. The goal of the curriculum developers is to show that it is important not only to have skills, to see the relationships among mathematical ideas, and to represent these ideas concretely or pictorially, but also to see why mathematics is so important in so many ways in today's world.

SECTION 2

COOPERATIVE LEARNING STRATEGIES

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Slavin, Robert E., *Student Team Learning: An Overview and Practical Guide.* Washington, DC: National Education Association, 1988. pp. 8-14, 19.

Introduction: TEAM TECHNIQUES

Do you remember being on a softball team, up at bat, with your teammates behind you shouting, "Hit it a mile!"? You knew you would do your best because your peers depended on you. The thrill of coming through for the team, of being the star even for a day, is one that few people forget. Being on a team, working for a cooperative goal, can be one of the most exciting experiences in life.

Can this kind of peer support for achievement, the easy acceptance of teammates, and the excitement of teamwork be transferred to the classroom? Such authors as James Coleman in *The Adolescent Society* (5) and Urie Bronfenbrenner in *Two Worlds of Childhood* (4) have suggested that teams could work in the classroom, and a long tradition of research in social psychology has shown that people working for a cooperative goal come to encourage one another to do their best, to help one another do well, and to like and respect one another (17). But how can team learning be made practical and effective in the classroom?

This question touched off fifteen years of research and development in classrooms. The result may be one answer to a major contemporary dilemma of schools: techniques that achieve both humanistic educational goals *and* basic skills learning goals instead of achieving one at the expense of the other.

When teachers place students on learning teams, each student knows that a group of peers supports his or her academic efforts. This is true because team success requires that all members do their best. Think back to the softball game. If you got that hit, your teammates went wild with approval; if you didn't, they consoled you and began encouraging the next batter. Can you remember anything like that happening in class? If you can, it was probably in a team spelling bee or other team activity in which your academic efforts could help a group achieve success.

TEAM TECHNIQUES

Educational research has demonstrated that heterogeneous teams made up of high and low achievers, boys and girls, Blacks, whites, and Hispanics, can be successfully transplanted from the playing field to the classroom. Several Student Team Learning techniques have now been extensively researched and found to significantly increase student learning. Some are designed for specific subjects and grade levels, and some are generic, broadly applicable methods. The latter, which are emphasized in this book, include Student Teams-Achievement Divisions, Teams-Games-Tournaments, and Jigsaw.

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Student Teams-Achievement Divisions (STAD)

In STAD, the simplest of the Student Team Learning methods, students are assigned to four- or five-member learning teams. Made up of high-, average-, and low-performing students, boys and girls, students of different racial or ethnic backgrounds, each team is a microcosm of the entire class. Each week, the teacher introduces new material in a lecture or a discussion. Team members then study worksheets on the material. They may work problems one at a time in pairs, take turns quizzing each other, discuss problems as a group, or use whatever means they wish to master the material. The students also receive worksheet answer sheets, making clear to them that their task is to learn the concepts, not to simply fill out the worksheets. Team members are told they have not finished studying until all are sure they understand the material.

Following team practice, students take quizzes on the material they have been studying. Teammates may *not* help one another on the quizzes; they are on their own. The quizzes are scored in class or soon after; then the individual scores are formed into team scores by the teacher.

The amount each student contributes to his or her team is determined by the amount the student's quiz score exceeds his or her past quiz average. This improvement score system gives every student a good chance to contribute maximum points to the team if (and only if) the student does his or her best, and shows substantial improvement or completes a perfect paper. Use of improvement scores has been shown to increase student academic performance even without teams (23), but it is especially important as a component of Student Team Learning. Think back to the baseball game; the one problem in that sport is the automatic strikeout, the team member who cannot hit the ball no matter how much he or she practices. In Student Team Learning, no one is an automatic strikeout, and by the same token no one is guaranteed success, because it is improvement that counts.

A weekly one-page class newsletter recognizes the teams with the highest scores. The newsletter also recognizes the students who exceeded their own past records by the largest amounts or who completed perfect papers.

STAD is not difficult to use. Following the steps outlined in this book, teachers need only assign their students to teams, allow team members to study together, give a regular quiz, and do 30 to 40 minutes of team scoring at the end of the week. However, the change in the classroom is dramatic. Suddenly, students begin helping each other learn basic skills instead of resenting those who know the answers and making fun of those who do not. They begin to see the teacher as a resource person who has valuable information that they need to accomplish something important, more like a coach than a boss. They begin to see learning activities as social instead of isolated, fun instead of boring, under their own control instead of the teacher's. They begin to feel a camaraderie toward their classmates that is common on the athletic field but not in the classroom. In the integrated classroom, this new sense of camaraderie extends across racial or ethnic barriers to create new friendships less likely to exist in the traditional classroom. In the mainstreamed classroom, this camaraderie extends across an even larger barrier, that between physically or mentally handicapped students and their classmates, to create a climate of acceptance instead of scapegoating. Researchers have documented all these effects of Student Team Learning and many others (see the section on research evidence); what is so striking is that all these outcomes stem from the same simple change in classroom procedure.

Teams-Games-Tournaments (TGT)

Teams-Games-Tournaments uses the same teams, instructional format, and worksheets as STAD. In TGT, however, students play academic games to show their individual mastery of the subject matter. Students play these games in weekly tournaments in which they compete with members of other teams who are comparable in past performance. The competitions take place at tournament tables of three students. Thus, a high-performing student from the Fantastic Four might compete with a high performer from the Pirates and one from the Superstars. Another table might have average-performing students from the Pirates, the Masterminds, and the Chiefs, and another low performers from the Superstars, the Tigers, and the Masterminds. Of course, the students are not told which is the highest table, which is next, and so on, but they are told that their competition will always be fair. While teams stay together for about six weeks, the tournament table assignments change every week according to a system that maintains the equality of the competition. Equal competition makes it possible for students of all levels of past performance to contribute maximum points to their teams if they do their best, in the same way that the improvement score system in STAD makes it possible for everyone to be successful.

After the tournament, team scores are figured, and a newsletter recognizes the highest-scoring teams and tournament table winners. Thus TGT uses the same pattern of teaching, team worksheet study, individual assessment, equal opportunities for success, and team recognition as that used in STAD, but its use of academic games instead of quizzes makes TGT even more exciting and motivating than STAD. In fact, TGT generates so much excitement that getting students to stop can be a problem. For example, in one study in a Baltimore junior high school attended by a substantial number of students bused from the inner city, all the students in two classes stayed after school (and missed their buses) to attend a tie-breaker playoff in a TGT tournament. Teachers using TGT have reported that students never particularly interested in school were coming after class for materials to take home to study, asking for special help, and becoming active in class discussions.

Jigsaw

While STAD and TGT were developed at Johns Hopkins University, Jigsaw was originally designed by Elliot Aronson and his colleagues at the University of Texas and then at the University of California at Santa Cruz. In Aronson's Jigsaw method, students are assigned to six-member teams; academic material is broken down into five sections. For example, a biography may be divided into early life, first accomplishments, family life, major setbacks, and later life. First, each team member reads his or her unique section. If no students are absent, two students share a section. Next, members of different teams who have studied the same sections meet in "expert groups" to discuss their sections. Then, students return to their teams and take turns teaching their teammates about their sections. Since the only way students can learn about sections other than their own is to listen carefully to their teammates, they are motivated to support and show interest in each other's work.

This book emphasizes a modification of Jigsaw developed at Johns Hopkins University. In this method, called Jigsaw II, students work in four- to five-member

teams as in TGT and STAD. Instead of each student having a unique section, all students read a common narrative, such as a book chapter, a short story, or a biography. However, each student receives a topic on which to become an expert. Students with the same topics meet in expert groups to discuss them, and return to their teams to teach their teammates what they have learned. Then students take individual quizzes, which are formed into team scores using the improvement score system of STAD, and a class newsletter recognizes the highest-scoring teams and individuals. Jigsaw II is easier to use than original Jigsaw because the teacher need not write separate readings for each topic.

For more information on Aronson's original Jigsaw method, see *The Jigsaw Classroom* (1).

Team Accelerated Instruction (TAI)

Team Accelerated Instruction is a combination of individualized instruction and team learning designed for use in elementary and middle school mathematics classes. In TAI, students work in the same heterogeneous teams as in the Student Team Learning methods (STAD, TGT, and Jigsaw II). However, in Student Team Learning, all students study the same materials at the same rate. In TAI, students are placed in individualized mathematics materials anywhere from addition to algebra, according to a placement test, and then work at their own levels and rates. Teammates check each other's work against answer sheets, except for final tests, which are scored by student monitors (who change each day). Team scores are based on the average number of units completed each week by the team members and the accuracy of the units; teams that meet a preset criterion receive attractive certificates or other rewards. The teams and the monitors manage all the routine checking, assignment, and materials-handling parts of the individualized program, freeing the teacher to work with individuals and homogeneous math groups. Because it is an individualized program, TAI is especially appropriate for use in heterogeneous math classes—such as those containing mainstreamed, low-achieving students and/or gifted students.

Cooperative Integrated Reading and Composition (CIRC)

The newest of the Student Team Learning methods is a comprehensive program for teaching reading and writing in the upper elementary grades (O).* In CIRC, teachers use basal readers and reading groups, much as in traditional reading programs. However, students are assigned to teams composed of pairs of students from two different reading groups. While the teacher is working with one reading group, students in the other groups are working in their pairs on a series of cognitively engaging activities, including reading to one another, making predictions about how narrative stories will come out, summarizing stories to one another, writing responses to stories, and practicing spelling, decoding, and vocabulary. Students work in teams to master main idea and other comprehension skills. During language arts periods, students engage in writing drafts, revising and editing one another's work, and preparing team or class books for publication.

*Letters in parentheses appearing in the text refer to the Additional Resources for the Second Edition beginning on page 78.

SIMILARITIES AND DIFFERENCES BETWEEN METHODS

STAD, TGT, and Jigsaw II share a score of features:

1. Four- to five-member, heterogeneous learning teams
2. Reward-for-improvement scoring (or equal competition)
3. Team recognition.

The weekly sequence of activities in these methods, however, is not the same. Figure 1 summarizes the basic schedule for each method.

The only difference between STAD and TGT comes after students have studied in their teams. In STAD, students take a quiz to show how much they have learned, and their team scores are based on the amount each team member has gained in achievement over his or her past record. The teaching and team study components of TGT are the same as in STAD, but instead of taking a quiz, students compete at ability-homogeneous tournament tables against representatives of other teams to show how much they have learned, and team scores are based on the team members' tournament points. In Jigsaw II, the initial information input is from textual materials instead of (or in addition to) teacher instruction. Each team member receives an expert topic. After reading, students discuss their topics in expert groups composed of all other students in the class who had the same topic. After the discussion, students report to their teams. Then, everyone is quizzed, and improvement points and team scores are computed as in STAD.

STUDENT TEAM LEARNING: THE RESEARCH EVIDENCE*

Achievement

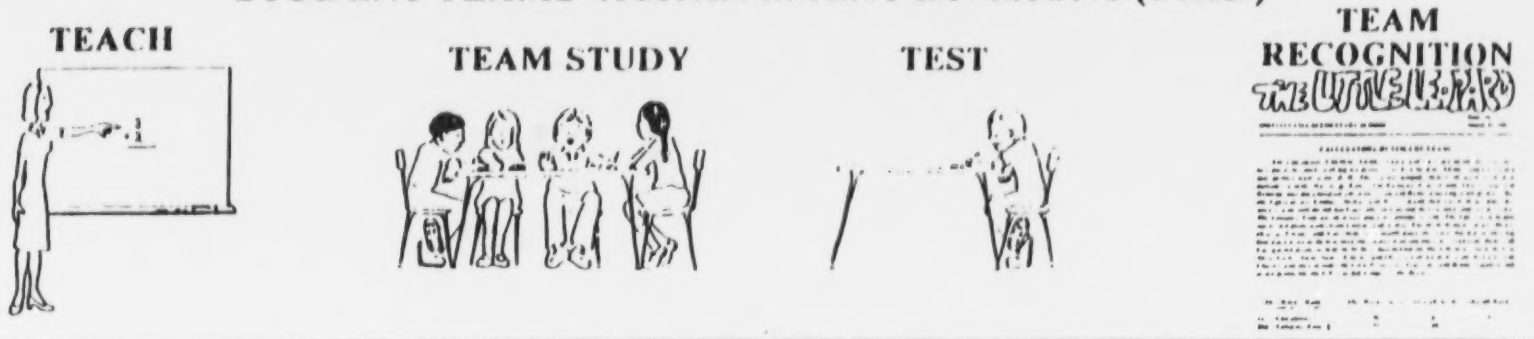
For a teacher deciding whether or not to use a new instructional method, the first question is usually, "Will it increase my students' learning?"

In the case of Student Team Learning, the answer is, "Yes, in most cases." A total of forty studies of at least four weeks' duration have evaluated STAD, TGT, TAI, and CIRC. In all the studies, which took place in regular classrooms without aides or special resources, one of the Student Team Learning methods was compared to traditionally taught classes studying the same material. In thirty-three of the forty studies, the students in the Student Team Learning classes learned significantly more than those in the traditionally taught classes; in seven, there were no differences (25). In most of these studies, teachers or classes were randomly assigned to Student Team Learning or traditional methods, the treatments were used for at least six weeks, and care was taken to ensure that the traditionally taught classes had the same curriculum materials as the Student Team Learning classes. Such a high success rate in well-controlled studies is unusual in research on new instructional methods.

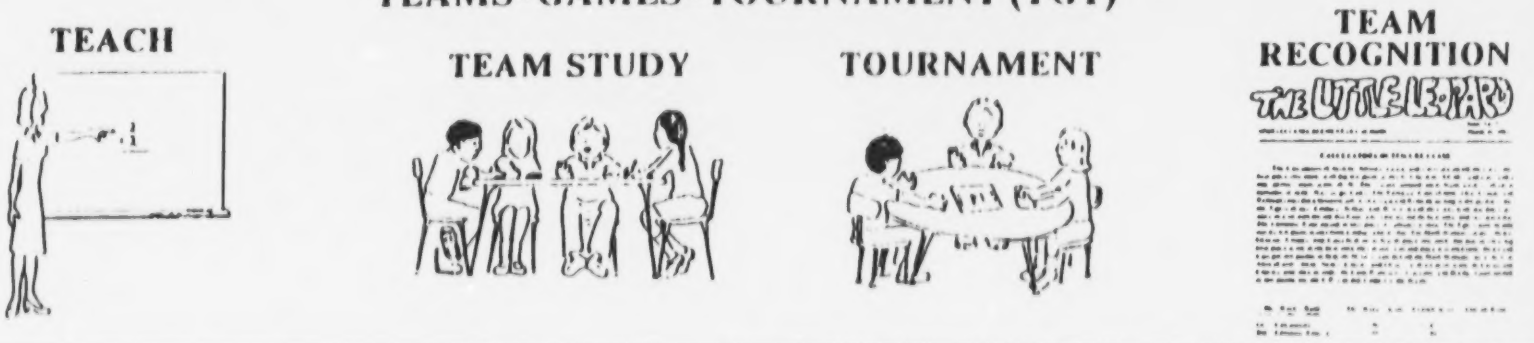
*For a more detailed review of the research, see *Cooperative Learning: Student Teams* (25).

Basic Schedule of Activities for STAD, TGT, and Jigsaw II

STUDENT TEAMS-ACHIEVEMENT DIVISIONS (STAD)



TEAMS-GAMES-TOURNAMENT (TGT)



JIGSAW II

Figure 1

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Student Teams-Achievement Divisions

STAD has been evaluated in twenty-one studies involving students in grades two through ten, in schools from inner-city Baltimore and Philadelphia to suburban Maryland to rural Maryland and Georgia to Nigeria, Israel, and West Germany. The subject areas have included language arts, mathematics, reading, science, and social studies. In sixteen of the studies, STAD was found to increase learning significantly more than traditional methods; in five there were no differences (20). STAD has been approved by the Joint Dissemination Review Panel, a U.S. Department of Education agency that examines research evidence on new programs and certifies for dissemination those that meet stringent requirements.

Teams-Games-Tournaments

TGT has been evaluated in nine studies in regular classrooms involving nearly 3,000 students in grades three to twelve. Like STAD, TGT has been studied in all kinds of schools in different parts of the United States. These studies have involved mathematics, language arts, social studies, and reading (19). In eight of the studies, TGT students learned significantly more than traditionally taught students; in the ninth, there were no differences. Based on this research evidence, TGT has been approved for dissemination by the Joint Dissemination Review Panel.

Team Accelerated Instruction

Some of the largest effects of Student Team Learning methods have been found in studies of TAI. Five of six studies found substantially greater learning of mathematics computations in TAI than in control classes, while one study found no differences (E). Across all six studies, the TAI classes gained an average of twice as many grade equivalents on standardized mathematics computations measures as traditionally taught control classes. For example, in one eighteen-week study in Wilmington, Delaware, the control group gained .61 grade equivalents in mathematics computations, while the TAI classes gained 1.65 grade equivalents (J). These experimental-control differences were still substantial (though smaller) a year after the students were in TAI. TAI has also been approved for dissemination by the Joint Dissemination Review Panel.

Cooperative Integrated Reading and Composition

Two studies of CIRC (O) found substantial positive effects of this method on standardized tests of reading comprehension, reading vocabulary, language expression, language mechanics, and spelling in comparison to traditional control groups. The CIRC classes gained thirty to seventy percent of a grade equivalent more than control classes on these measures in both studies. In addition, positive effects of CIRC were found on writing and on oral reading skills.

It seems safe to say that Student Team Learning usually has important positive effects on student achievement. Teachers can feel confident that if they use these methods as described in this book, students will learn at least as well as and probably better than they will with their usual methods.

User's Guide to Student Team Learning

STAD

Use in Grades 2-12 in
- Mathematics.
- Language Arts.
- Science.
- Social Studies skills, such as geography, graph reading.
- Foreign language.
- Any material with single right answers.

Advantages:
- Frequent quizzes give feedback to students and teacher.
- Relatively quiet, businesslike form of Student Team Learning
- Improvement scores challenge students
- Takes less instructional time than TGT.
- Curriculum materials available in most subjects.

TGT

Use in Grades 2-12 in
- Mathematics.
- Language Arts.
- Science.
- Social Studies skills, such as geography, graph reading.
- Foreign language.
- Any material with single right answers.

Advantages:
- Students enjoy tournaments.
- Fair competition challenges students.
- Students do most scoring.
- Curriculum materials available in most subjects

Jigsaw II

Use in Grades 3-12 in
- Social Studies, when students are learning from books or other readings.
- Literature.
- Science.
- Any material when information comes from books or other readings.

Advantages:
- Can be used for more open-ended objectives.
- Students take real responsibility for teaching teammates.
- Students exercise reading, teaching, discussing, and listening skills.
- Frequent quizzes give feedback to students and teacher.
- Improvement scores challenge students.
- Easily adapted to library research projects.

TAI

Use in Grades 2-8 in
- Mathematics.

Advantages:
- Individualization provides for needs of all students, gives students success at their own level.
- Students do almost all scoring and manage materials.
- Materials are completely prepared, very little out-of-class time needed.
- Materials cover skills from addition to algebra.
- Students usually learn math skills rapidly.

CIRC

Use in Grades 2-6 in
- Reading.
- Writing.
- Language Arts.

Advantages:
- Combination of mixed-ability teams and same-ability reading groups allows students to succeed at their own levels.
- Reading program replaces workbooks with engaging activities supported by reading research.
- Writing program provides practical approach to the writing process that combines writing and language arts instruction.

Figure 2

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The Structural Approach to Cooperative Learning

Teachers who are well versed in a variety of team structures can create skillful lessons that engage and enlighten their students.

The structural approach to cooperative learning is based on the creation, analysis, and systematic application of *structures*, or content-free ways of organizing social interaction in the classroom. Structures usually involve a series of steps, with proscribed behavior at each step. An important cornerstone of the approach is the distinction between "structures" and "activities."

To illustrate, teachers can design many excellent cooperative *activities*, such as making a team mural or a quilt. Such activities almost always have a specific content-bound objective and, thus, cannot be used to deliver a range of academic content. In contrast, *structures* may be used repeatedly with almost any subject matter, at a wide range of grade levels, and at various points in a lesson plan. To illustrate further, if a teacher new to cooperative learning learns five activities, he or she might well report back after a week, "Those worked well, but what should I do next week?" If, instead, the teacher learns five structures, he or she could meaningfully include cooperative learning in lessons all year to further the academic progress of students in any subject matter.

Structures differ in their usefulness in the academic, cognitive, and social domains, as well as in their usefulness in different steps of a lesson plan.

Accordingly, structures can be combined to form "multistructural" lessons in which each structure—or building block—provides a learning experience upon which subsequent structures expand, leading toward predetermined academic, cognitive, and social objectives.

Competitive vs. Cooperative Structures

In teaching, new structures continue to be developed, and old structures continue to evolve. They are based on distinct philosophies of education and lead to variations in types of learning and cooperation, student roles and communication patterns, teacher roles, and evaluation (Kagan 1985). There are several dozen distinct structures, some with adaptations, such as the half dozen major variations on Jigsaw (Kagan 1989). Among the most well-known structures are Jigsaw (Aronson et al. 1978); Student-Teams Achievement-Divisions, or STAD (Slavin 1980); Think-Pair-Share (Lyman 1987); and Group-Investigation (Sharan and Hertz-Lazarowitz 1980).

One of the most common structures teachers use is a competitive structure called Whole-Class Question-Answer (see fig. 1). In this arrangement, students vie for the teacher's attention and praise, creating negative interdependence among them. That is, when the teacher calls

Fig. 1. Whole-Class Question-Answer

1. The teacher asks a question.
2. Students who wish to respond raise their hands.
3. The teacher calls on one student.
4. The student attempts to state the correct answer.

Fig. 2. Numbered Heads Together

1. The teacher has students number off within groups, so that each student has a number: 1, 2, 3, or 4.
2. The teacher asks a question.
3. The teacher tells the students to "put their heads together" to make sure that everyone on the team knows the answer.
4. The teacher calls a number (1, 2, 3, or 4), and students with that number can raise their hands to respond.

on one student, the others lose their chance to answer; a failure by one student to give a correct response increases the chances for other students to receive attention and praise. Thus, students are set against each other, creating poor social relations and peer norms against achievement.

In contrast to the competitive Whole-Class Question-Answer structure stands Numbered Heads Together, a simple four-step cooperative structure (see fig. 2). Numbered Heads includes teams, positive interdependence, and individual accountability, all of which lead to cooperative interaction among students. Positive interdependence is built into the structure: if any student knows the answer, the ability of each student is increased. Individual accountability is also built in: all the helping is confined to the heads together step; students know that once a number is called, each student is on his or her own. The high achievers share answers because they know their number might not be called, and they want their team to do well. The lower achievers listen carefully because they know their number might be called. Numbered Heads Together is quite a contrast to Whole-Class Question-Answer in which only the high achievers need participate and the low achievers can (and often do) tune out.

Why So Many Structures?

As I mentioned, there are a number of different structures, as well as variations among them. This variety is necessary because the structures have different functions or domains of usefulness.

To illustrate, let's contrast two similar simple structures, Group Discussion and Three-Step Interview (see fig. 3). In Group Discussion, there is no individual accountability; in some groups some individuals may participate little or not at all. Also, there is no assurance that team members will listen to each other: in some groups all the individuals may be talking while none are listening. Further, at any one moment, if one person at a time is speaking, one-fourth of the class is involved in language production.

In contrast, in Three-Step Interview, each person must produce and receive language; there is equal participation; there is individual accountability for listening, because in the third step each student shares what he or she has heard; and for the first two steps, students interact in pairs, so one-half rather than one-fourth of the class is involved in language production at any one time.

Thus, there are profound differences between apparently similar simple cooperative structures. Group Discussion is the structure of choice for brainstorming and for reaching group consensus; Three-Step Interview is far better for developing language and listening skills as well as promoting equal participation. When the teacher is aware of the effects of different structures, he or she can design lessons with predetermined outcomes.

Turning to more complex structures, the differences are even greater. For example, Co-op Co-op (Kagan 1985a) is a 10-step structure in which students in teams produce a project that fosters the learning of students in other teams. Each student has his or her mini-topic, and each team makes a distinct contribution toward the class goal. The structure involves higher-level thinking skills, including analysis and synthesis of materials. Like all structures, however, Co-op Co-op is content-free. For example, when it is used in university classrooms, students may work 10 weeks to complete a sophisticated audiovisual presentation, whereas in a kindergarten classroom, a project might culminate in a 20-minute presentation in which each student on a team shares with the class one or two new facts he or she learned about the team animal. Whether the projects are brief or extended, the content complex or simple, the students in kindergarten or college, the 10 steps of Co-op Co-op remain the same.

Likewise, different structures are useful for distinct objectives such as teambuilding, classbuilding, communication building, mastery, and concept development. Among those structures used for mastery, there are further important distinctions. For example, Color-Coded Co-op Cards are designed for efficient memory of basic facts; Pairs Check is effective for mastery of basic skills; and Numbered

Fig. 3. Group Discussion vs. Three-Step Interview

Group Discussion	Three-Step Interview
Steps in the Process:	
1. The teacher asks a low-consensus question. 2. Students talk it over in groups.	1. Students form two pairs within their teams of four and conduct a one-way interview in pairs. 2. Students reverse roles: interviewers become the interviewees. 3. Students roundrobin: each student takes a turn sharing information learned in the interview.
Characteristics:	
• Unequal participation • Not all participate • No individual accountability • 1/4 of class talking at a time	• Equal participation • All participate • Individual accountability • 1/2 of class talking at a time

Fig. 4. Overview of Selected Structures

Structure	Brief Description	Functions Academic & *Social*
	Teambuilding	
Roundrobin	Each student in turn shares something with his or her teammates.	Expressing ideas and opinions, creation of stories. *Equal participation, getting acquainted with teammates.*
	Classbuilding	
Corners	Each student moves to a corner of the room representing a teacher-determined alternative. Students discuss within corners, then listen to and paraphrase ideas from other corners.	Seeing alternative hypotheses, values, problem-solving approaches. *Knowing and respecting different points of view, meeting classmates.*
	Communication Building	
Match Mine	Students attempt to match the arrangement of objects on a grid of another student using oral communication only.	Vocabulary development. *Communication skills, role-taking ability.*
	Mastery	
Numbered Heads Together	The teacher asks a question, students consult to make sure everyone knows the answer, then one student is called upon to answer.	Review, checking for knowledge, comprehension. *Tutoring.*
Color-Coded Co-op Cards	Students memorize facts using a flash card game. The game is structured so that there is a maximum probability of success at each step, moving from short-term to long-term memory. Scoring is based on improvement.	Memorizing facts. *Helping, praising.*
Pairs Check	Students work in pairs within groups of four. Within pairs students alternate—one solves a problem while the other coaches. After every two problems the pair checks to see if they have the same answers as the other pair.	Practicing skills. *Helping, praising.*
	Concept Development	
Three-Step Interview	Students interview each other in pairs, first one way, then the other. Students each share with the group information they learned in the interview.	Sharing personal information such as hypotheses, reactions to a poem, conclusions from a unit. *Participation, listening.*
Think-Pair-Share	Students think to themselves on a topic provided by the teacher; they pair up with another student to discuss it; they then share their thoughts with the class.	Generating and revising hypotheses, inductive reasoning, deductive reasoning, application. *Participation, involvement.*
Team Word-Webbing	Students write simultaneously on a piece of chart paper, drawing main concepts, supporting elements, and bridges representing the relation of ideas in a concept.	Analysis of concepts into components, understanding multiple relations among ideas, differentiating concepts. *Role-taking.*
	Multifunctional	
Roundtable	Each student in turn writes one answer as a paper and a pencil are passed around the group. With Simultaneous Roundtable more than one pencil and paper are used at once.	Assessing prior knowledge, practicing skills, recalling information, creating cooperative art. *Teambuilding, participation of all.*
Inside-Outside Circle	Students stand in pairs in two concentric circles. The inside circle faces out; the outside circle faces in. Students use flash cards or respond to teacher questions as they rotate to each new partner.	Checking for understanding, review, processing, helping. *Tutoring, sharing, meeting classmates.*
Partners	Students work in pairs to create or master content. They consult with partners from other teams. They then share their products or understanding with the other partner pair in their team.	Mastery and presentation of new material, concept development. *Presentation and communication skills.*
Jigsaw	Each student on the team becomes an "expert" on one topic by working with members from other teams assigned the corresponding expert topic. Upon returning to their teams, each one in turn teaches the group; and students are all assessed on all aspects of the topic.	Acquisition and presentation of new material, review, informed debate. *Interdependence, status equalization.*
Co-op Co-op	Students work in groups to produce a particular group product to share with the whole class; each student makes a particular contribution to the group.	Learning and sharing complex material, often with multiple sources; evaluation; application; analysis; synthesis. *Conflict resolution, presentation skills.*

Heads Together is designed for review or checking for comprehension. A list of major structures and their functions is presented in Figure 4 (See Kagan 1989 for details about the structures in the figure as well as others).

Structures differ also in their usefulness in the academic, cognitive, and social domains, as well as in their usefulness in different steps of a lesson plan. The most important considerations when determining the domain of usefulness of a structure are:

1. What kind of cognitive and academic development does it foster?
2. What kind of social development does it foster?
3. Where in a lesson plan does it best fit?

To illustrate the distinct domains of usefulness of different structures, let's contrast Color-Coded Co-op Cards and Three-Step Interview (see fig. 5). Color-Coded Co-op Cards work well for convergent thinking (knowledge-level thinking), such as when the academic goal is memorization of many distinct facts; the Co-op Cards promote helping and are most often used for practice. Three-Step Interview does not serve any of those goals well. In contrast, Three-Step but not the Co-op Cards is most often used for divergent thinking (evaluation, analysis, synthesis, and application-level thinking), such as when the academic goal is promoting thought as part of participation in the scientific inquiry process or as part of the writing process; Three-Step Interview promotes listening skills and serves well to provide an anticipatory set for the lesson ("What would you most like to learn about . . . ?" or "What do you now know about . . . ?") or to obtain closure ("What is the most important thing you have learned about . . . ?" "If we had more time, what aspect of . . . would you like to study further?").

Because each structure has distinct domains of usefulness and can more efficiently reach some but not other cognitive, academic, and social goals, the efficient design of lessons involves using a variety of structures, each chosen for the goals it best accomplishes. Reliance on any one structure limits the cognitive and social learning of students.

Fig. 5. Contrasting Domains of Usefulness

	Color-Coded Co-op Cards	Three-Step Interview
Academic & Cognitive	Memory of basic facts and information	Evaluation, analysis, synthesis, application
Social	Helping, praising	Listening
Steps in Lesson Plan	Practice	Anticipatory set, closure

The Multistructural Lesson

A cooperative learning teacher fluent in many structures can competently move in and out of them as needed to reach certain learning objectives. Such a multistructural lesson, for example, might begin with content-related classbuilding using a Line-up, followed by content-related teambuilding using Round Table. The lesson might then move into Direct Instruction, followed by Partners for information input. To check for comprehension and emphasize key concepts, the teacher would shift into Numbered Heads Together. Next might come Group Discussion or Team Word-Webbing for concept development, followed by a Cooperative Project. No one structure is most efficient for all objectives, so the most efficient way of reaching all objectives in a lesson is a multistructural lesson.[1]

Whether the objective is to create a poem, write an autobiography, or learn the relationship of experimental and theoretical probability, the teacher's ability to use a range of structures increases the range of learning experiences for students, resulting in lesson designs that are richer in the academic, cognitive, and social domains. By building on the outcomes of the previous structures, the teacher is, thus, able to orchestrate dynamic learning experiences for students.

All Together, a Structure a Month

For schools and districts conducting training for cooperative learning, there are advantages in the structural approach. Whereas it can be quite overwhelming for teachers to master "cooperative learning," it is a relatively easy task to master one structure at a time.

Many schools and districts have adopted a "structure of the month" strategy in which site-level trainers introduce the structure, provide demonstration lessons, and lead participants in planning how to adapt the structure to their own classroom needs. When many teachers at a site are all working to learn the same structure, there is a common base of experience, promoting formal and informal collegial coaching and support.□

[1]Two recent books illustrate how teachers can use multistructural lessons to reach a wide range of academic objectives. B. Andrini, (1989), *Cooperative Learning and Math: A Multi-Structural Approach* (San Juan Capistrano, Calif.: Resources for Teachers); and J.M. Stone, (1989), *Cooperative Learning and Language Arts: A Multi-Structural Approach* (San Juan Capistrano, Calif.: Resources for Teachers).

References

Aronson, E., N. Blaney, C. Stephan, J. Sikes, and M. Snapp. (1978). *The Jigsaw Classroom*. Beverly Hills, Calif.: Sage.

Kagan, S. (1989). *Cooperative Learning Resources for Teachers*. San Juan Capistrano, Calif.: Resources for Teachers.

Kagan, S. (1985). "Dimensions of Cooperative Classroom Structures." In *Learning to Cooperate, Cooperating to Learn*, edited by R. Slavin, S. Sharan, S. Kagan, R. Hertz Lazarowitz, C. Webb, and R. Schmuck. New York: Plenum.

Lyman, F. (1987). "Think-Pair-Share: An Expanding Teaching Technique." *MAA-CIE Cooperative News* 1, 1: 1–2.

Sharan, S., and R. Hertz-Lazarowitz. (1980). "A Group-Investigation Method of Cooperative Learning in the Classroom." In *Cooperation in Education*, edited by S. Sharan, P. Hare, C. Webb, and R. Hertz-Lazarowitz. Provo, Utah: Brigham Young University Press.

Slavin, R. (1980). *Using Student Team Learning*. Baltimore: The Center for Social Organization of Schools, The Johns Hopkins University.

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Social Skills for Successful Group Work

Interpersonal and small-group skills are vital to the success of cooperative learning.

In a 4th grade classroom the teacher is trying out learning groups. "This is a mess," she thinks. In one group, students are bickering over who is going to do the writing. In another group, one child sits quietly, too shy to participate. Two members of a third group are talking about football while the third member works on the assignment. "My students do not know how to work cooperatively," she sighs.

What is a teacher to do in such a situation? Simply placing students in groups and telling them to work together does not, in and of itself, produce cooperation—and certainly not the higher achievement and positive social outcomes that can result from cooperative learning groups. The reason? Traditional group efforts may go wrong in many ways. Group members sometimes seek a free ride on others' work by "leaving it to George" to complete the group's tasks. Students who are stuck doing all the work sometimes decrease their efforts to avoid being suckers. High-ability group members may take over in ways that benefit themselves at the expense of lower achieving group members (the "rich get richer" effect). Pressures to conform may suppress individual

Photograph by V. Spencer

Social skills—like other skills—must be learned. But once learned, the abilities to cooperate and to work effectively with others will serve students well in school and later on in their careers.

efforts. Or group work may break down because of divisive conflicts and power struggles.

Only under certain conditions can we expect cooperative efforts to increase students' efforts to achieve and improve the quality of their relationships with classmates and their psychological health. These conditions are positive interdependence, face-to-face (promotive) interaction, individual accountability, social skills, and group processing (Johnson and Johnson 1987, Johnson et al. 1988). Each of these elements mediates the relationship between cooperation and its outcomes (Johnson and Johnson 1989). And they are all interrelated. Using social skills, for example, makes sense only when there is positive interdependence. In competitive and individualistic situations, trust and empathy are inappropriate.

Teaching Cooperative Skills

People do not know instinctively how to interact effectively with others. Nor do interpersonal and group skills magically appear when they are needed. Students must be taught these skills and be motivated to use them. If group members lack the interpersonal and small-group skills to cooperate effectively, cooperative groups will not be productive.

To achieve mutual goals, students must communicate accurately and resolve conflicts constructively.

Fig. 1. T-Chart

Encouraging Participation	
Looks Like	**Sounds Like**
Smiles	What is your idea?
Eye contact	Awesome!
Thumbs up	Good idea!
Pat on back	That's interesting.

In order to coordinate efforts to achieve mutual goals, students must (1) get to know and trust one another, (2) communicate accurately and unambiguously, (3) accept and support one another, and (4) resolve conflicts constructively (Johnson 1986, Johnson and Johnson 1987). Interpersonal and small-group skills make possible the basic nexus among students; and if students are to work together productively and cope with the stresses of doing so, they must have at least a modicum of these skills.

Teachers can follow a series of steps in teaching students interpersonal and small-group skills. First, students must see the need to use the skill. To want to learn the skill, students must believe that they will be better off if they know it. Teachers can highlight the need for the skill by explaining why it is important, displaying what it looks like on posters and bulletin boards, and informing students they will be rewarded for using it.

Second, students must understand what the skill is and when it should be used. This information is most commonly conveyed through a "T-Chart" (Johnson et al. 1988) and through modeling the skill. (See Figure 1 for an example of a T-Chart.) The teacher lists the skill (e.g., encouraging participation) and then asks the class, "What would this skill look like?" After several nonverbal behaviors are generated, the teacher asks, "What would this skill sound like?" Several phrases are listed. The teacher then models the skill until the students have a clear idea of what the skill sounds and looks like.

Third, to master a social skill, students must practice it again and again. Immediately after defining the skill, the teacher should ask students to role-play the skill several times with the persons sitting next to them. The social skill may also be assigned to students as a role to be engaged in during group meetings. For example, the teacher could assign the roles of reader, encourager, summarizer, and elaboration-seeker to the members of a cooperative group. The roles could be rotated daily until every student has been responsible for each role several times. At the end of each cooperative lesson, teachers can announce how many times the skill was observed. New skills need to be cued consistently and reinforced for some time. Teachers should be relentless in encouraging prolonged use of cooperative skills.

Fourth, students must process how frequently and how well they are using the skill. Students need to discuss, describe, and reflect on their use of the skill in order to improve their performance. To ensure that they do so, teachers should provide a regular time for group processing and give students group processing procedures to follow. A standard processing task is, "Name three things your group did well, and name one thing your group could do better next time." Such group processing will not only increase students' interpersonal and small-group skills, it will also increase achievement (Johnson et al. in press, Yager et al. 1985) and the quality of the relationships developed among students (Putnan et al. 1989).

Fifth, students must persevere in practicing the skill. Students have to practice cooperative skills long enough to go through the stages of awkward enactment, phony (role-playing) enactment, and mechanical use of the skill to automatic, routine use where the skill is fully internalized. Ways to ensure that the students persevere include continuing to assign the skill as a group role, continuing to give students feedback as to how frequently and how well they are performing the skill, and rewarding the groups when members use the skill.

Students learn more social skills and engage in them more frequently when the group is given bonus points for their doing so.

Using Bonus Points

Many teachers want to use a structured program to teach students the interpersonal and small-group skills they need. Such a program will give students the opportunity to earn bonus points for their groups by using targeted cooperative skills. We have found that students, even socially isolated and withdrawn ones, learn more social skills and engage in them more frequently when the group is given bonus points for their doing so (Lew et al. 1986a, 1986b). Bonus points can be accumulated for academic credit or for special rewards, such as free time or minutes listening to one's own choice of music. We recommend the following procedure:

1. Identify, define, and teach a social skill you want students to use in working cooperatively with one another. This skill becomes a target for mastery. Skills include staying with the group, using quiet voices, giving direction to the group's work, encouraging participation, explaining answers, relating present learning to past learning, criticizing ideas without criticizing people, asking probing questions, and requesting further rationale (Johnson et al. 1988).

2. Use group points and group rewards to increase the use of the cooperative skill:

a. Each time a student engages in the targeted skill, the student's group receives a point.

b. Points may be awarded only for positive behavior.

c. Points are added and never taken away. All points are permanently earned.

Teaching Social Skills: A View from the Classroom

Laura Carson and Sharon Hoyle

After cooperative learning training, I (Laura Carson) entered fall semester with high goals for using cooperative groups in my high school home economics classroom. I was determined to reap full advantage of the benefits by beginning early in the year, so I targeted the third day of Career Investigation class for my first cooperative lesson.

When the day arrived, I explained to my 29 students that they would be working in groups to teach each other vocabulary, using the social skills *encouraging* and *checking for understanding*. I also explained why those skills were important when working with others. As a class, we brainstormed and listed examples of what the skills would look and sound like in a group. Then I explained my role as observer, assigned students to groups, and anxiously awaited what I knew would be a successful and enjoyable experience for both the students and me.

However, as I monitored the groups, I quickly became frustrated. In several groups I saw students who weren't helping each other but who were merely trading their vocabulary lists. Other groups were interacting but not using the social skills. As the end of class drew near, I announced that we would spend the rest of the period discussing the use of the social skills. When I asked students what they had done to encourage each other or check for understanding, I got either no response or direct quotes from the examples on our list. As I had been unable to observe any use of the social skills, when I gave the students my feedback, many groups received observation sheets with nothing on them. We were all discouraged.

On reflection, I realized that I had expected my students to go too far too fast, without knowing *how* to work together. Most of my students had probably gone years without having to work with others. I also realized that I had given my students too many *new* things to focus on at once. They were not accustomed to sitting and working together, being responsible for teaching each other, or consciously practicing social skills, and I had asked them to do all of these—while concentrating on learning new content. No wonder we were all feeling disheartened.

I resolved to start again and ease my class into working in groups and practicing social skills. I planned frequent brief group activities without assigning social skills, to allow students to acclimate themselves to working and sitting together. I decided to keep students in the same groups for a while so they could get to know each other, and I assigned familiar tasks such as memorizing or completing worksheets to minimize the number of new skills being practiced at one time.

Two weeks later I reintroduced the concept of social skills. I decided to start with one skill—*encouraging*—instead of two. We again brainstormed reasons to use *encouraging*, along with what it would sound and look like. I paired the skill with a familiar task to allow students to focus on the use of the social skill. This time there was definite improvement in the amount of encouraging I observed in the groups, and yet a number of individuals still did not use the skill. I struggled to determine what was needed to fill the gap.

I concluded that some students still needed better models of the skill to relate to; listing examples of *encouraging* was not enough for them. So, over the next two weeks, I planned different ways to model the skill. On one day I asked two students who I knew were displaying the skill to role-play an assignment with me in which we demonstrated acceptable ways to encourage each other. On another day, students went through a "dry run" to practice the skill. For five minutes they sat with their groups and took turns saying encouraging phrases while displaying encouraging actions. There was no task involved. For a few of my students, it was the first time I had seen or heard any evidence of the skill.

When we returned to completing tasks, I altered my method of recording students' use of social skills during group work. Instead of recording words and actions used as a group, I began listing them for each individual. As an incentive for all, I began to offer a reward to groups in which I was able to observe each individual use at least two encouraging words and two encouraging actions. With this, I began to hear students encouraging each other to encourage! At last success was ours.

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Interpersonal skills may be the set of skills most important to one's employability, productivity, and career success.

3. Summarize total points daily. Emphasize daily progress toward the goal. Use a visual display such as a graph or chart.

4. Develop an observational system that samples each group for the same amount of time. In addition, use student observers to record the frequency of students' use of the targeted skills.

5. Set a reasonable number of points for earning the reward. Rewards can be both social and tangible. A social reward is having the teacher say, "That shows thought," "I like the way you explained it," "That's a good way of putting it," "Remarkably well done." The points earned can be traded in for a tangible reward: free time, computer time, library time, time to a play a game, extra recess time, and any other activity that students value.

6. In addition to group points, class points may be awarded. For example, the teacher might say, "Eighteen people are ready to begin and helped the class earn a reward," or "I noticed 12 people worked the last 25 minutes." Class points may be recorded with a number line, beans in a jar, or checks on the chalkboard.

7. In addition to social skills, potential target behaviors include following directions, completing assigned tasks, handing in homework, behaving appropriately in out-of-class settings such as lunch or assemblies, or helping substitute teachers.

Long-Term Outcomes

Teaching students interpersonal and small-group skills produces both short-term and long-term outcomes (Johnson and Johnson 1989). Short-term outcomes include greater learning, retention, and critical thinking. Long-term outcomes include greater employability and career success.

Most people realize that a college education or vocational training improves their career opportunities, but many are less aware that interpersonal skills may be the set of skills most important to their employability, productivity, and career success. Employers typically value verbal communication, responsibility, initiative, and interpersonal and decision-making skills. A question all employers have in mind when they interview a job applicant is, "Can this person get along with other people?" Having a high degree of technical competence is not enough to ensure a successful career. A person also has to have a high degree of interpersonal competence.

For example, in 1982 the Center for Public Resources published "Basic Skills in the U.S. Workforce," a nationwide survey of businesses, labor unions, and educational institutions. The Center found that 90 percent of the respondents who had been fired from their jobs were fired for poor job attitudes, poor interpersonal relationships, and inappropriate behavior. Being fired for lack of basic and technical skills was infrequent. Even in high-tech jobs, the ability to work effectively with other personnel is essential, as is the ability to communicate and work with people from other professions to solve interdisciplinary problems.

In the real world of work, the heart of most jobs—especially higher-paying, more interesting jobs—is getting others to cooperate, leading others, coping with complex problems of power and influence, and helping solve people's problems in working together. Millions of technical, professional, and managerial jobs today require much more than technical competence and professional expertise. Such jobs also require leadership. More and more, employees are asked to get things done by influencing a large and diverse group of people (bosses, subordinates, peers, customers, and others), despite lacking much or any formal control over them and despite their general disinterest in cooperating. Employees are expected to motivate others, negotiate and mediate, get decisions implemented, exercise authority, and develop credibility—all tasks that require interpersonal and small-group skills. Thus, the skills developed within cooperative efforts in school are important contributors to personal employability and career success. In addition, social skills are directly related to building and maintaining positive relationships and to keeping psychological health. Maintaining a set of good friends, being a caring parent, maintaining a loving relationship with your spouse—all directly relate to how interpersonally skilled you are. One's quality of life as an adult depends largely on one's social skills. Furthermore, the more socially skilled people are, the healthier they tend to be psychologically. For these and many other reasons, we should teach students the skills necessary to build and maintain cooperative relationships with others.

As Important as Academic Content

If the potential of cooperative learning is to be realized, students must have the prerequisite interpersonal and small-group skills and be motivated to use them. These skills should be taught just as systematically as mathematics, social studies, or any subject. Doing so requires that teachers communicate to students the need for social skills, define and model these skills, have students practice them over and over again, process how effectively students perform the skills, and ensure that students persevere until the skills are fully integrated into their behavioral repertoires. If teach-

ers do so, they will not only increase student achievement, they will also increase students' future employability, career success, quality of relationships, and psychological health.□

References

Johnson, D.W. (1986). *Reaching Out Interpersonal Effectiveness and Self-Actualization*. Englewood Cliffs, N.J: Prentice Hall.

Johnson, D.W., and F. Johnson. (1987). *Joining Together: Group Theory and Group Skills*. Englewood Cliffs, N.J.: Prentice Hall.

Johnson, D.W., and R. Johnson. (1989). *Cooperation and Competition: Theory and Research*. Edina, Minn.: Interaction Book Company.

Johnson, D.W., R. Johnson, and E. Holubec. (1988). *Cooperation in the Classroom*. Edina, Minn.: Interaction Book Company.

Johnson, D.W., R. Johnson, M. Stanne, and A. Garibaldi. (In press). "The Impact of Leader and Member Group Processing on Achievement in Cooperative Groups." *Journal of Social Psychology*.

Lew, M., D. Mesch, D.W. Johnson, and R. Johnson. (1986a). "Positive Interdependence, Academic and Collaborative-Skills Group Contingencies and Isolated Students." *American Educational Research Journal* 23: 476–488.

Lew, M., D. Mesch, D.W. Johnson, and R. Johnson. (1986b). "Components of Cooperative Learning: Effects of Collaborative Skills and Academic Group Contingencies on Achievement and Mainstreaming." *Contemporary Educational Psychology* 11: 229–239.

Putnan, J., R. Johnson, J. Rynders, and D.W. Johnson. (1989). "Effects of Cooperative Skill Instruction on Promoting Positive Interpersonal Interactions Between Moderately-Severely Mentally Handicapped and Nonhandicapped Children." Submitted for publication.

Yager, S., D.W. Johnson, R. Johnson, and B. Snider. (1985). "The Effect of Cooperative and Individualistic Learning Experiences on Positive and Negative Cross-Handicap Relationships." *Contemporary Educational Psychology* 10: 127–138.

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ESSENTIALS OF A COOPERATIVE LESSON

I. A PLAN.....
- A. Determine the content objective
  - -general
  - -specific
- B. Introduce any new content or skill required to complete the task
  - -whole group
  - -smaller ability groups
- C. Determine groups
  - -size
  - -composition
  - -arrangement

II. A PROGRAM FOR POSITIVE INTERDEPENDENCE.....
- A. Reliance on one another
  - -limited materials, space, or time
  - -jigsaw materials (some to each member)
  - -assign roles, and rotations if appropriate
  - -identify criteria for success
- B. Individual accountability
  - -verbal checks
  - -one paper selected at random
  - -group chosen representative paper
  - -individual test/quizzes

III. PEOPLE SKILLS - CHOOSE AND TEACH.....
- A. Identify new skill(s)
  - -model and analyse
  - -provide practice time
  - -observe for use of skill
  - -provide feedback
- B. Review and renew already incorporated skills
  - -reflect on progress to date
  - -encourage continued use
  - -elaborate on refinement of old skills

IV. PROCESSING - TIME TO REFLECT.....
- A. Evaluate progress on content - how did we learn what we learned?
  - -written statements
  - -open discussion
  - -intergroup sharing
- B. Evaluate progress on collaborative skills - how did we do as a group?
  - -continuums completed by the individual
  - -questions shared by group
  - -attention to feedback of observers
  - -goal setting for both the individual and the group
  - -application of skills to "real" life

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P is for prosocial teaching

Several California elementary schools are experimenting with the notion that there's more to life than looking out for Number O

BY ALFIE KOHN

Mary Korzick's first graders are clustered around her on the floor, listening intently, their backs to a poster on the wall that announces: "We had fun while we were doing work." Korzick, a tall, gray-haired woman who seems at once decisive and warm, is explaining how stories can sometimes elicit empathic reactions from listeners. She puts this into language a 6-year-old can grasp, and one boy immediately signals his understanding. "Like when you hear them, your eyes start to water," he says. Korzick smiles at him and nods. Exactly.

Today's book is *Crow Boy*, a Japanese story about an alienated child who is ridiculed by his peers until he shines in a talent show with his uncanny bird imitations. As Korzick reads a passage in which the protagonist is called stupid, a blond boy in the class blurts out plaintively, "He's not stupid!"

Korzick pauses to ask the children to turn to their partners, who are sitting next to them, and share their thoughts on what works and what doesn't work for making friends. The room hums with ideas for a few minutes, and then she calls on a few of them to summarize not what

Continued on page 61

Cooperative learning: Two girls help each other with a poetry-writing assignment. Facing page: The buddy system at work.

Prosocial

CONTINUED FROM PAGE 25

they, themselves, have come up with but what they have just heard from their partners.

When the story is over, it is time to return to their seats — which means, in this classroom, to tables arranged so that groups of children can sit together. Without being asked, the children help one another off the floor and, in some cases, head over to their chairs arm in arm. There, each pair receives a sheet of paper with four drawings on it. The task is to cut out the panels and, working in teams, figure out how to arrange them in a logical sequence.

Korzick, like her colleagues at Walt Disney Elementary School and two other schools in California's San Ramon Valley, an hour's drive from San Francisco, is part of a landmark study in social, moral, and academic education. The organization and tone of her classroom, the content of some of her lessons, and her approach to discipline are all elements in a research project designed to find out whether children can be taught to care about other people as well as about themselves.

For the past six years, the Child Development Project (known to everyone in town as CDP) has been training San Ramon-area teachers, designing schoolwide activities, and reaching out to parents. This fall, the program also started up in two elementary schools in nearby Hayward, a school district more ethnically diverse than San Ramon. Although the project touches the lives of all children in the schools where it is in place, its staff has been particularly interested in tracking the progress of a group of students who are now in the sixth grade. The idea is to determine, by means of a battery of tests and careful observations, whether children in the program are turning out any different from their counterparts in neighboring schools.

Supported by a grant of roughly $1 million each year from the William and Flora Hewlett Foundation, the psychologists and other staff members at CDP are actually in the process of redefining character education and challenging assumptions about "human nature." Theirs is by far the most ambitious project of its kind ever attempted — and it seems to be working.

"I've watched a variety of character-education fads sweep through the schools," says Bill Streshly, the superintendent of San Ramon Valley schools. "Most of them have been little add-on programs for whatever the social problem is — sex, drugs, patriotism, kindness to animals. They're not part of the basic mission of the schools, and they fade out. But CDP incorporates its ethical mission in every part of the school day."

In some schools, Streshly continues, an occasional class period is devoted to values education. "Then it's, 'Take out your math books, do the problems, first one through gets an M&M.' That," he says, "is when the real values come out." Those values aren't always obvious, but they are potent nonetheless. Students are implicitly taught that other people are to be regarded as obstacles to their own success. They also get the message that their achievement, like their behavior, is a function of external rewards and punishments.

CDP, by contrast, is based on the idea that "we need to get them to *internalize* ethics," says Streshly. "There aren't enough M&M's to keep people on track, to manipulate behavior once they leave the high-surveillance school setting. And teachers teach cooperation, because cooperation is a part of citizenship that we want."

The program being implemented in the San Ramon schools has several components, all designed with current psychological and educational research in mind. First, there is the approach to classroom management. In place of authoritarian, sit-down-and-shut-up discipline — or gimmicks to reward obedience — CDP teaches teachers to work *with* children to decide how their classroom should be organized and how behavior problems should be solved. Project leaders encourage the teachers to develop warm relationships with students so there will be fewer behavior problems to begin with.

That explains why, when a chubby fifth-grade boy at Walt Disney complains to his teacher, Becky Rodriguez, that someone is hitting him, her instant response is to ask him what he can do about it. (For the time being, he decides simply to move across the room.) It is the reason Mary Korzick, after one of her students throws a rock during recess, chooses to hold a class meeting and solicit the children's opinions on whether a prohibition on rock-throwing is a reasonable rule and why. (They decide that it does make sense.)

And when some of Ruby Tellsworth's second graders at Rancho Romero School were rude to her, she took them aside, reminded them that she had never treated them like that, and let them know how awful they had made her feel. (Since then they have been more considerate.)

The second part of the program consists of cooperative learning — having each child work with a partner or in larger groups to help one another with assignments. With respect to both achievement and social skills, CDP staff members be-

lieve that allowing children to jointly devise problem-solving strategies makes more sense than either of the two dominant American classroom models: working against one another (competition) and working apart from one another (individualized learning). In cooperative learning, says 10-year-old Disney student Justin Wells, "It's like you have four brains."

Joel Thornley, superintendent of the Hayward school system, where CDP is just now getting under way, overcame his doubts only after watching cooperative learning in practice. "Once we saw the kinds of responses they get in San Ramon, we had no reservations," he explained recently. "Cooperative learning works. If there's a single bet we've missed over the years, it's making kids sit quietly at their desks instead of letting them work with each other."

CDP's third component is a curriculum designed to display and reinforce what psychologists call "prosocial" values: caring, sharing, and helping. The texts that teach students reading and writing skills are chosen with an additional purpose in mind: to get children thinking about how other people feel.

Today, Ann Cerri's sixth graders are discussing a story about a white boy who meets a black person for the first time — an entirely realistic premise in the white, affluent schools of San Ramon Valley. The story's narrator worries that his new acquaintance will be insulted if asked whether his forebears were slaves.

Cerri puts down the book and asks her students whether this is a reasonable concern. It depends whether they actually *were* slaves, one girl suggests. It depends how the question is asked, says a boy. It depends on the area of the country they're in, someone else offers. Soon the whole class is discussing the matter animatedly, imagining themselves in the position of the narrator and of the black man. One student recalls how he felt when people kept asking him about his grandfather's death.

Beyond the individual classroom, CDP has arranged for the three schools to provide activities that give children practice at being helpful to, taking responsibility for, and learning about others. Each child is assigned a buddy in another class, for example, so a fifth grader and a second grader periodically have a chance to socialize, and older children can set an example.

Eric Schaps, CDP's director, is especially proud of this part of the project. He shows a visitor a photograph of a bus full of children returning from a field trip. A first grader in the foreground has fallen asleep, his head resting on his fifth-grade buddy's shoulder. "What fifth-grade kid do you know who would do this?" he asks. American schools have "systematically deprived kids of this kind of cross-age interaction. It's the kind of experience that makes one a kind, nurturing person — not being responsible for cleaning the erasers but for caring about another person." And the younger child, Schaps adds, learns that he is cared for.

Schaps ticks off some of the other elements of the program. Older students can give up some free time to tutor younger children — and many do. The schools don't just collect toys for something called "charity"; they adopt one needy family, whose names are withheld but whose circumstances are described to the children in detail.

Some aspects of CDP follow students home. Children may be asked to interview their parents about how they came to California, or to bring their own grandparents to class so everyone can hear what school was like in the olden days. Some homework is specifically designed to be done with parents: A second grader may bring home a poem about a child who is teased by a sibling. Parents are invited to share their own childhood memories, to help their son or daughter compose a poem on the same subject, and then to describe the whole experience in writing. Certain science projects are also intended to be done by the whole family, to foster collaboration at home.

The Child Development Project was born in the mind of Dyke Brown, now 73, a Yale Law School alumnus of sparse white hair and old-world manners. Ask Brown about his politics, and the first thing he tells you is that he voted for Roosevelt. After helping to found the Ford Foundation in the 1940s and starting California's first integrated, coeducational boarding school in the 1960s, Brown became concerned with what he calls the "increasing degree of self-preoccupation in our students."

The Hewlett Foundation, established in 1966 by the cofounder of the Hewlett-Packard Co. and now the largest philanthropic organization on the West Coast, gave him some money in 1978 to spend a year talking to child-development specialists, educators, and researchers concerned with prosocial behaviors — almost 75 of them, as it turned out — about what could be done to correct this self-centeredness. "Almost everyone with whom I talked feels that we ought to do something to help increase the prosocial balance in the character of our young," Brown wrote in his report to the foundation.

He also noted that emphasizing prosocial qualities doesn't handicap children's ability to succeed in society. "In fact," he wrote, "individual competence

and capability are enhanced by increased awareness of others and concern for their needs."

On the strength of these and other findings, Brown proposed a massive, seven-year grant to put this research into action, and even though this wasn't the sort of thing it normally funded, the Hewlett board agreed. Brown went looking for people who had enough experience working with educators so the program could be implemented smoothly, but who also had the methodological expertise to evaluate whether the program was doing any good.

He found Schaps, a social psychologist, working in California's Napa Valley on a large-scale project to measure the effectiveness of school drug-abuse programs. Schaps and Brown set up the CDP, hired a staff, designed a program and a research plan, and then began looking for some receptive schools in which to train teachers.

Mike Halloran, an assistant superintendent who works with Bill Streshly, knew of Schaps' work on drug abuse and heard that CDP was in the market for a school district. A 25-year veteran of education in the area, he figured the San Ramon Valley would not only be receptive but also could serve as Exhibit A for why such a project was needed in the first place.

Halloran is an informal man with a square face, salt-and-pepper hair, and a weary laugh. "We don't have any poor areas — the slums here cost $200,000," he says wryly, his chin resting on his fist. He sketches the local population: professionals who buy half-acre lots with pools, barbecues, and fences, people who "have the idea that if you provide a kid with his own phone, everything's all right. They isolate the kid in the house after school" to protect him, with the result that these children lack the sort of peer support that sustains inner-city youths.

"You get alienation of kids from themselves, from each other, and from the rest of society," Halloran says. "Perhaps it falls to the school to take up some of that slack and teach social interaction."

Most educators in the area seemed to agree, and so the cities of San Ramon Valley, strung out along Route 680 with gorgeous mountains on either side — an area of fashionable office buildings and smoked-glass banks on Something-or-Other Canyon Road; vast new office parks for Pacific Bell and Chevron Oil; and pricey, interchangeable housing developments under construction everywhere you look — became the site for an experiment to see if the public schools could be used to raise children who don't just look out for Number One.

CDP chose six of the district's 13 elementary schools — two groups of three, carefully matched for size and socioeconomic status — that were eager to be part of the project. A coin was ceremoniously flipped to determine which three would be the program schools (Walt Disney, Rancho Romero, and Country Club) and which would be the comparison schools to serve as a control group.

The program of training teachers began in 1982, as it has begun each year since then, with

a one-day introduction in May, followed by a full week in August, and then one day each month throughout the next school year. In the training sessions, teachers meet in groups of about 13 and get some hands-on practice at working together — which serves the dual purpose of reducing their professional isolation and giving them a taste of the approach they will be using in their own classrooms. Someone from the CDP staff observes each teacher weekly and coaches him or her on how to handle a disruptive child, how to run a class meeting, how to structure cooperative learning, or how to make the best use of texts to promote prosocial values.

The staff now candidly confesses to having made mistakes in the training procedures. CDP worked with kindergarten teachers the first year, first-grade teachers the next year, and so on — with the result that it took too long to involve the whole faculty. Moreover, teachers were expected to start putting the program into practice while they were first learning its concepts.

But most San Ramon teachers — even those who had misgivings in the beginning — have become believers. "I couldn't see it at first, and I found it very difficult" to learn, says Phil Wallace, who traces his traditional approach to classroom discipline to his military background. But now, having just retired from teaching fourth grade, Wallace works part time as a substitute and sometimes runs across his former students.

"There's a tremendous difference" between those taught by CDP-trained teachers and the other children, he says now. "It's a wonderful thing to see: These kids are helping each other, caring for each other. I said to myself, 'Holy mackerel — don't tell me this actually works!' "

Ruby Tellsworth, 53, remembers the day she came back late from a break and found her second graders already sitting together in a group, earnestly discussing something. When she asked what was going on, they told her a problem had come up during recess, and they had decided on their own to hold a class meeting to work it out — which they proceeded to do while she finished her coffee.

Because the children being tracked by CDP experimenters graduated from Tellsworth's class several years ago, the research doesn't require that she keep using the project's approach to discipline or teaching. But she, like virtually all teachers trained in the program and interviewed for this article, have no intention of going back to the way they used to do things.

"I'll be using this as long as I teach," says Tellsworth. "It's a way of life now. I have a grandson I'm using this on. And it does work. If I was put in a school where I had to use Assertive Discipline" — a currently fashionable approach in which teachers use a system of rewards and penalties to enforce rules that they alone specify — "I would leave."

Tellsworth tells a story that illustrates another side of the program. A mother was concerned that her daughter didn't stand up for herself with her peers. But midway through a CDP school year, the mother overheard her talking on the phone with a bossy classmate and was amazed to find that her daughter was explaining why she didn't want to play with the other girl, enumerating the behaviors that bothered her, and making it clear that they would get together only if the girl controlled them.

Such tales don't surprise Eric Schaps. "We're looking for a healthy balance of concern for self and concern for others," he says. "We don't want to turn kids into doormats." In fact, results of CDP's tests show that children in the program schools are more likely to stand up for their own views than are those in other area schools.

The project teaches children that "you shouldn't please your peers at the expense of your integrity and what you think is right," says Marilyn Watson, who is in charge of teacher training. Effective social problem solving is encouraged, she explains, as is "articulating dissenting opinions" — and there is nothing about caring for others that conflicts with these goals.

Watson, who used to teach education at Mills College, uses up calories just having a conversation: Her head, hands, and shoulders are always in motion. "We're not saying there's no self-interest," she emphasizes. "We're saying there's more to work with than just self-interest."

Today, Marilyn Watson is serving as informal tour guide through one of San Ramon's nonprogram schools, which is typical of affluent suburban elementary schools. In the back of a first-grade classroom is a box of books, one of which, *Being Destructive*, is packed with "do nots" and "you shoulds." "If you are destructive because you do not care, you may need to be punished," a young reader is informed.

In the front of the room, the teacher is speaking in a sharp voice and snapping her fingers. "Boys and girls, when I get to zero, you must be looking at me. Five, four. . . ." She points ominously at *CLASS WARNING* written on the blackboard. "You must *stay in your seats,*" she insists. "If you raise your hand, I will come to you." Later she lines up the children so they can look at a map one at a time. She refers to herself in the

third person.

Watson later points out how this teacher, presumably well meaning and well trained, is making the children compete with one another rather than learn to work together, how she is encouraging them to depend on her rather than taking responsibility for their own learning and behavior — and how she keeps herself distant from them at the same time.

In a fifth-grade room down the hall, only the A+ papers are tacked to the wall. The teacher's disciplinary approach is traditional, yet the room is far more chaotic than CDP classrooms. "I'm waiting!" she yells to a group of oblivious 10-year-olds. "Anyone talking now will be sure their name won't get in the paper."

Next door, a teacher proudly shows off her "checking account" system of class control: a poster board lists how much a student "pays" for late work or a messy desk and how large a deposit he or she will get for an A on a test.

Afterward, Watson concedes that such a system may produce quiet classrooms and perhaps even higher test scores in the short run. "But you're aiming for the long run, for them to do it because they want to learn, not because they want money," she explains. "You can get the [desired] behavior this way. What you can't get is a commitment to the behavior, a sense that 'I'm in charge,' a sense of personal responsibility."

Paul Mussen, professor emeritus of psychology at the University of California at Berkeley and one of the first researchers to look seriously at helping behaviors in children, is one of several experts who serve on the CDP's advisory board. "The project is unusual in terms of being based on solid, well-established developmental principles and the findings of empirical research," he says. "I think most researchers would be very impressed with this."

Recent interviews with 10 leading developmental psychologists, sociologists, and educators bear this out. When given details of the California project, they indicated that the CDP approach is consistent with the best available data on raising and teaching children.

Such a project, the specialists say, has a fighting chance for success because it builds on children's natural social inclinations. "It's amazing how many adults think that human nature is self-oriented and you've got to beat morality into kids," says William Damon, chairman of the education department at Clark University and author of the forthcoming book *The Moral Child*. "This is as wrong as thinking the world is flat. Children are born with a keen social sensitivity, experiencing emotional reactions that you can call moral in the first or second year of life. There's lots of good data on that."

"The capacity to help and to hurt people are both part of our human nature," says Carolyn Zahn-Waxler, a research psychologist at the National Institute of Mental Health who has worked on a 15-year-long investigation of prosocial behaviors in children. "Studies have demonstrated changes as a result of being given training in empathy and cooperation."

The specialists also note that children can best be influenced in these ways while they are young. "Elementary school is the right time to start," says Damon. "You can make a powerful difference in the developmental path of the child very early. Most interventions have not been as successful because they've started too late." Echoing Mike Halloran, the researchers say that school is a proper place to teach such things. "The school needs to develop people's personality and not just skills — above all because the family often fails," is how sociologist Amitai Etzioni puts it. "You do affect character [in the schools] whether you like it or not. There are only two ways to go

Child Development Project

CDP's prosocial environment: Caring, sharing, and helping.

about it: unaware and badly, or consciously and well."

Furthermore, teaching children to care about others does not make them wimps. Ervin Staub, professor of psychology at the University of Massachusetts, summarizes the research findings this way: "The people who are most helpful are quite strong as individuals, have a positive self-concept, believe they have the capacity to influence events, and so have a very good capacity to fulfill their own goals."

While some may wonder whether improving social skills and moral values elbows out academics, many observers don't see these areas as mutually exclusive. "Dealing with social issues is in some significant measure an intellectual thing," says Ted Sizer, chairman of the education department at Brown University. "You think about the consequences of your actions and other people's actions. I don't separate the social sphere and the intellectual sphere."

Hundreds of studies have demonstrated that cooperative learning in particular improves academic performance. Two of the leading researchers in the field, David and Roger Johnson, professors of education at the University of Minnesota, have performed 26 studies comparing cooperative, competitive, and individualized learning techniques on a range of grade levels and subject matters. In 21 of these studies, students learning in cooperative classrooms performed the best on tests, while three of the studies yielded no significant differences and two produced mixed results. Other researchers have found much the same thing.

After five years, CDP has found no difference in standardized test scores between program and comparison schools. (Children in San Ramon already score in the top 10 percent statewide, so there may not be much room for improvement due to the beneficial effects of cooperative learning.)

The strong theoretical grounding for the project doesn't mean it can be immediately exported to every school district in the nation, however — regardless of what is found in San Ramon. First of all, the CDP staff is nowhere near ready to package its program for widespread use. And as Mussen, the Berkeley psychologist, notes, the program is so comprehensive, requiring extensive teacher training and resources, that mass-producing it presents practical problems, at least for now.

The kind of research support the program enjoys is mirrored by public opinion in the Valley; a visitor, in fact, has trouble finding a single critic of CDP. Bob duPont, part of a solid conservative majority on the San Ramon School Board, says he knows of no opposition to the project. "We can — and have to — provide the basic values of positive citizenry in the schools. What's the alternative? If the schools don't do it, no one will."

Some parents were nervous when the idea was first presented to them. Fred Messreni, a corporate manager who was recently elected to the City Council, recalls his initial reaction: " 'What is this program that's going to be experimenting with the behavior of my child?' But the concern rapidly evaporated and became excitement about the opportunity she was given."

Messreni, 42, sees CDP as teaching the skills of "win-win negotiation." For that reason, he says, "The program transcends political persuasion. It's difficult to argue with constructive, positive influences that bring results."

The Greningers, who live a few blocks away from Messreni, have modified their own approach to parenting after watching what the project has done for their three children in Walt Disney. "We've incorporated it into our home," says Barb Greninger, which includes holding family meetings to resolve conflicts. "Every time we've included [the children] in the decision-making process, it's worked out better."

"I swear," her husband, Dave, a Little League coach, chimes in, "the kids who are the troublemakers around here" — he waves at the neighborhood beyond his sliding glass doors — "don't go to Disney."

One teacher who does express reservations about CDP is Bill Randall, who has just completed a year of training for his sixth-grade classroom. "It takes an undue amount of time," he

says. "People in education are giving so much. You have to ask yourself, 'Why am I here? To teach study skills or to teach behavior skills?'

"But my main concern is, does it last? Does it stick in the kids? Is there really a noticeable difference? The ideals sound fine, but what's the reality?"

The CDP researchers asked the same questions, unsatisfied with mere anecdotal accounts of success. Not all the tests administered to the approximately 400 children — or the systematic monitoring of 67 classrooms each spring by outside observers — have shown statistically significant differences between the program schools and the control schools.

One possible reason is that not all the teachers were equally effective at grasping and implementing the principles of the program. Another is that all the comparison schools have independently become convinced of the value of cooperative learning by now, and have begun encouraging their own teachers to use some form of this approach — making a true test of CDP's comparative effectiveness difficult.

Nevertheless, some of the results are striking. After five years, the research shows that children in CDP classrooms are more likely to be spontanecusly helpful and cooperative, better able to understand conflict situations, and more likely to take everyone's needs into account in resolving them.

These findings have also apparently impressed the Hewlett Foundation. "If the hypotheses hadn't been borne out, we'd be folded up by now," says Dyke Brown, the father of CDP. Instead, the grant has been extended for another three years so that two critical questions can be answered: Will the positive effects persist once students move on to junior high school and mix with children who haven't been taught to care and cooperate? And will such a program work in a less affluent, more ethnically heterogeneous school district — a district such as Hayward?

Ervin Staub, who, like Paul Mussen, lent his expertise to the project when it got under way, is optimistic on both counts. The CDP children's behavior, he says, probably won't disappear in the "real world" because the children have learned to get others' attention "by friendly initiative rather than by force." An auspicious circle is set up, so their positive behaviors can elicit positive responses, causing them to feel good about themselves and be even more likely to reach out to others again.

Moreover, says Staub, "in more heterogeneous environments, where there are issues of conflict and prejudice and so on, programs that give children opportunity to interact in a positive way can have a greater effect on perceptions of each other."

In any case, the people who created the Child Development Project don't have particularly extravagant expectations. "Here's competitive individualism over here," says Brown, stretching out his left hand perpendicular to the floor. "In 50 years you're not going to move the society over here to complete altruism." He wiggles the fingers of his right hand, a few feet away. "You're going to make a modest difference." But that, for the people of San Ramon Valley, seems to be enough for now. •

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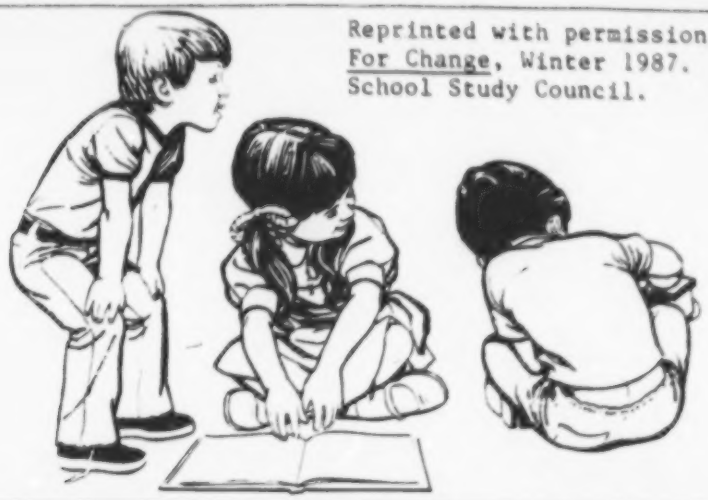


Cooperative Learning Groups: Increasing Composite Time On Task

by Edna O. Schack, Lester E. Brown, Karla Behounek, Linda Rosenbaum, and Janet V. Burcalow

Sara: 126 plus or minus?
Michael: Minus
Sara: I don't think you can do that.
Jason: Yeah, you can. Bigger numbers minus smaller numbers. You can do that!
Michael: Yey, Jason.
Jason: Now minus. 126 minus 55 = 71.
Michael: I'm gettin' lost.
Jason: 126 minus 55 = 71 (dictating to Michael). (giggles)
Jason: OK. Now. We gotta pick another number.

Imagine the above scenario in your classroom. Three second grade students clustered about a table, working cooperatively to solve a problem. What are the benefits of working cooperatively with a group? What is the effect of the group on time on task? What can you, as a teacher do to facilitate time on task through the cooperative process?

Examples of cooperative efforts abound in our society: sport teams, corporate project teams, surgical unit teams, church committees, service organizations. In the educational setting, there is a large body of research supporting the cognitive and affective gains of cooperative learning situations. "More than 100 research studies in the last 20 years have found that students learn the material better in this kind of structure. In addition, they develop positive social attitudes and behavior" (Leming and Hollifield, 1985). The research, however, generally is aimed at middle school and junior high students. What about primary school children?

For several years, two teachers have incorporated cooperative learning processes into the instructional program of their primary classrooms. The scenario opening this article is an excerpt from the authors' observations of the cooperative process in action. The children were solving a *Find the Pathway* problem. (A description and example of *Find the Pathway* accompanies this article — See Figure 1 & Figure 2.) Through our observations of the children in and out of cooperative groups and through discussions with the teachers, it became apparent that primary school children can benefit from participating in cooperative groups.

What are the benefits to primary school children of working cooperatively with a group?

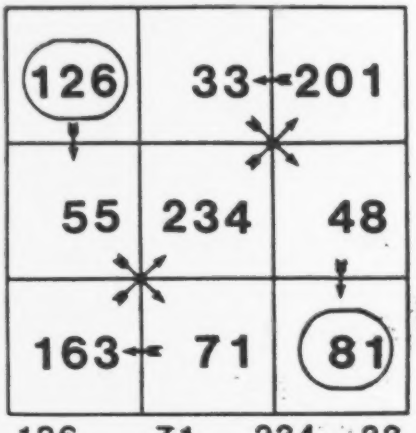
Verbalization, reinforcement, signal back on task; each of these processes has been repeatedly described by researchers and practitioners as important to learning. Cooperative group learning activities encourage the use and development of each of these processes. These processes were evident in our observations of primary school children.

126	33	201
55	234	48
163	71	81

Figure 1.

Find the Pathway

Find the Pathway is an arithmetic activity discovered by second grade teacher Linda Rosenbaum a few years ago. The activity requires students to make decisions about the direction of the pathway by applying addition and subtraction to the numbers in a matrix.



126	71	234	33
−55	+163	−201	+48
71	234	33	81

Figure 2.

Students begin with the circled number, adding or subtracting a number in an adjacent box to obtain a result that is in a box adjacent to the latter number. Arrows are drawn to show the pathway chosen and the equation used is written on a worksheet. This strategy is repeated until all numbers in the matrix have been used. The students then circle the final number on the pathway. The final solution is shown here.

While opportunities for verbalization, reinforcement, and signal back on task are available in the small cooperative groups, the activities will not occur simply as a result of grouping. The teacher has the responsibility for modeling these communication activities. A teacher who verbalizes thought processes, provides positive and negative reinforcement to students, and guides activities toward the goal by signaling students back on task becomes a model for students to follow as they participate in small cooperative groups.

What is the effect of the group on time on task?

The opportunity to be signaled back on task or help a team member back on task creates a rich atmosphere for greater composite time on task.

Consider the scenario above. Michael was "getting lost." Had he been sitting at his desk working individually on the problem, Michael's mind may have wandered to the family camping trip coming up and getting himself back on task may have been quite a task in itself. In the cooperative context, however, Michael was able to verbalize his wanderings and a team member was available to refocus Michael's attention to the problem. Granted, Jason spent a few seconds of his time to help Michael, but in so doing verbalized the arithmetic process at hand, reinforcing his own learning of that concept and practicing his communication skills.

Michael's willingness to verbalize his wanderings and Jason's uncriticizing response represent an attitude toward the learning environment that teachers can help develop. Everyone's mind wanders sometimes, but the teacher who responds with a patient and understanding attitude to such situations will promote patience and understanding in the students' responses to each other while in cooperative groups.

When introducing concepts and strategies that will later be used in small cooperative groups, a teacher can guide the large group toward the goal by making directive statements or asking questions. While in cooperative groups students learn to imitate this strategy. The scenario above illustrates students' use of similar statements and questions. "Now we gotta pick another number" and "126 plus or minus?" are examples of statements and questions that help keep the group on task. Such statements actually seek input from other group members, encouraging the group as a whole to move on to the next step of the task.

Children working on their own are usually slower to move on to the next step of the task because they are unsure of the questions to ask. Verbalization of task steps by other group

members enables each member to practice the steps of a task. The teacher introduces the strategy or steps of the task during large group activities. Although not all students will remember all steps from the large group rehearsal, the small cooperative groups provide the opportunity to share and repeat the steps. The repetition can eventually payoff for each individual when the strategy becomes internalized, making subsequent independent work more efficient.

Finally, from our scenario, Michael's statement, "I don't think you can do that," again directs the group's focus to the task. This statement challenges the other members' knowledge of the task strategy, encouraging them to test that strategy. The members mentally test their strategies, sometimes discuss alternatives, draw a conclusion, and verbalize it. From the doubts of one member, all members' knowledge of the task strategy is reinforced.

Often the competitive environment in which students work alone stresses the attainment of quick, correct answers. A student in the competitive environment is not rewarded for questioning his or her strategy and can end up practicing an incorrect strategy. Students working cooperatively imitate questioning strategies of the teacher which helps guide the whole group to the correct strategy. The cooperative group not only helps students to focus on the task but also encourages the development and use of an effective strategy to accomplish the task.

In summary, our observations of primary school children working cooperatively in groups revealed benefits of learning and time on task. Successful cooperative groups depend on teachers that model verbalization, reinforcement, patience, questioning, and problem-solving strategies. The success also depends on a teacher who can serve as facilitator, monitor, and modifier of the cooperative process.

To implement the cooperative process in your classroom, consider the following hints that will help you to be a good model, facilitator, monitor and modifier while encouraging increased time on task.

DO model verbalization, reinforcement and questioning strategies in the classroom.
DO create an atmosphere and attitude of patience and understanding among students and teacher in our classroom.
DO rehearse problem-solving strategies in large groups prior to assigning such a problem to small cooperative groups.
DO allow sufficient time for the groups to reach closure on the task.
DO build accountability of each student into each task.
DO monitor the groups as they work cooperatively on a problem or project.
DO provide input to a group when their own resources seem drained.
DO remember that grouping is flexible; group structures should match subject matter and personalities.

Johnson and others (1984) described how important learning to cooperate is to one's success in life:

> Throughout human history, it has been those individuals who could organize and coordinate their efforts to achieve a common purpose that have been most successful in virtually any human endeavor. This is as true of joining with one's fellows to hunt or to raise a barn as it is of space exploration (p. 13).

Our world is replete with examples of cooperative efforts to attain a common goal. Using the ideas presented here, you can incorporate the cooperative process into your classroom, providing students with increased opportunities to practice problem solving strategies, verbalize concepts and ideas, provide reinforcement to fellow students and increase the composite time on task.

References:

Johnson, D. W., Johnson, R. T., Holubec, E. J., and Roy, P. (1984). *Circles of Learning: Cooperation in the Classroom.* Alexandria, VA: The Association for Supervision and Curriculum and Development.

Leming, J. and Hollifield, J., eds. (1985). "Cooperative Learning: A Research Success Story." *Educational Researcher, 14*(3), 28-29.

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Information Users for COOPERATIVE LEARNING

Duin, Ann Hill. "Implementing Cooperative Learning Groups in the Writing Curriculum." Journal of Teaching Writing 5, 2 (Fall 1986): pp. 315-323.

IMPLEMENTING COOPERATIVE LEARNING GROUPS IN THE WRITING CURRICULUM

ANN HILL DUIN

As part of my undergraduate degree in teaching, I studied how to teach Values Education or how to increase students' awareness of their mutual existence with other people. Despite this training, my classroom showed no signs of interdependence because each student's grade depended on him or herself. There might have been discussion or study groups, but the end result depended on the individual student producing the facts or skills that I wanted him or her to produce, usually on a test or written assignment.

Then, as part of my graduate program, I registered for a course known as Social Psychology of Education and on that fateful first day was flung into a cooperative learning group. My group, composed of five people, had no choice but apparently to accept yet another professor's biases. I asked myself, "Aren't cooperative learning groups simply small groups with a new name?" To my amazement, my experience embodied much more than simply "working in a small group."

Research indicates that a vast majority of students in the United States view school as a competitive enterprise where students try to do better than the other students, and this expectation is widespread and grows stronger as students progress through school. According to researchers Roger and David Johnson there are three basic ways students can interact with each other as they learn: "They can compete to see who is 'best', they can work individualistically on their own toward a goal without paying attention to other students; or they can work cooperatively with a vested interest in each other's learning as well as their own. Of the three interaction patterns, competition is presently the most dominant" (1-2).

A paradox emerges when you look at the vast majority of research comparing student-student interaction patterns. While most teachers stress competition, interaction patterns indicate that students learn more effectively when they work cooperatively. Over 800 studies suggest that students who learn via cooperative learning groups (as compared to competitive or individualistic learning) achieve more, are more positive about school, subject areas, and teachers, are more positive about each other, regardless of ability, ethnic background, handicapped or not, and are more effective interpersonally (Johnson and Johnson, Johnson et al.). Cooperative learning emphasizes the cognitive approach to learning where students actively discover knowledge, gain insight into problems, organize and process information, and direct their own learning.

As part of the "process" approach to writing, we as writing teachers have been encouraged to structure opportunities where teachers and students discuss the process they go through as they write. We encourage students to work with prewriting and writing strategies: to brainstorm, to invent numerous tree structures, outlines, flowcharts, and lists, to read and react to each other's writing. Teachers such as Moffett, Elbow, Macrone, Rackham, and Beach have promoted the use of student-teacher interaction and student-student interaction in order to promote students' awareness of audience, purpose, and goals as they write. By following their guidelines, we have taken away some of the artificial setting of "writing for the teacher" and have hopefully promoted a more realistic situation of writing for specific audiences, purposes, and effects. While we view this approach as vital to our students' cognitive development in understanding writing as a process, we are often at a loss as to how to plan, organize, and evaluate the subsequent interactive sessions. As Holubec states, "We may glean an idea here or there, and try it. If it works, we are delighted; but if it doesn't, we haven't the slightest idea about how to make it work. In the long run, it may just be easier to teach writing the way we were taught it, rather than to try experiments which may or may not be successful" (35).

I suggest that English teachers follow the cooperative learn

ing group guidelines listed below as a step toward an effective use of small group interaction in the teaching of writing. These guidelines will help you design student-student interaction sessions which serve your particular needs and classroom situations. These guidelines helped me design student-student interaction sessions for use in a junior or senior high writing curriculum:

1. As far as possible, specify the instructional objectives.
2. Select the group size most appropriate for the lesson.
3. Assign students to groups. Usually, you will want to maximize the heterogeneity in the groups.
4. Arrange the classroom. Cluster the groups of students so that they will not interfere with one another. Within the groups, all students should be able to see the relevant materials, talk with one another, and exchange materials and ideas.
5. Explain the task and the cooperative goal structure. Tell students that there is a group goal, that there are set criteria to meet, and that all group members will be rewarded on the basis of the quality of their group's work.
6. Provide the appropriate materials.
7. Observe interactions between students. Keep a tally of types of interactive situations and look for signs of higher ability students aiding lower ability students.
8. Intervene only in the role of a "consultant" who will suggest possible solutions to the groups' questions, and "consult" in a way as to help members learn the interpersonal skills necessary for cooperating.
9. Formulate an exact statement of the criteria students must meet to demonstrate mastery of the assigned material and evaluate the group product using this set of criteria.

As a composition teacher, cooperative learning can be used to practice invention techniques, share writing, write together, revise, edit, discuss material assigned, etc. For the groups to be cooperative, group interdependence and individual accountability must be included in the assignment. Interdependence is established by assigning a group goal such as producing a single paper or set of answers, giving the group a single set of materials, or assigning group roles which encourage participation. Individual accountability is established by requiring that everyone participate in the group. You can assign individual work as preparation for the group work or appoint each member to fulfill a particular job.

Rackham, in his text *From Sight to Insight*, includes activities where students individually explore the sensory qualities of things around them. The following are the steps I took when revising Rackham's "Senses Perception" activity for use as a cooperative learning activity at the junior or senior high level. In developing this activity, I followed the cooperative learning guidelines listed earlier.

SENSES PERCEPTION ACTIVITY (adapted for group use)

First, I determined the specific instructional objective and group size for the activity.

Objective: During the writing class, the student will describe details using his or her senses, one at a time, by first speaking and then writing down the details in a class journal and in small group compositions.

Group size: 4-5 students randomly put together, or grouped heterogeneously, depending on the situation.

Next, I determined the task(s) for each group.

Tasks: Through a cooperative goal structure, students will do the following —

1. Each person in the group will listen to what is read, answer aloud, and then jot down the sensory words or sentences which come to his or her mind.
2. Each student will write his or her sensory perceptions in his or her journal for the writing class.
3. Students will then do two small group activities: writing up their perceptions in the form of two group compositions.

I then thought of possible small group activities from which students could write two group compositions:

Small group work: Students could take a notebook with them to a laundromat, basketball game, mall, lunchroom, lab, lake, bus stop, anywhere! They should spend 30 minutes (minimum) recording what they see, hear, smell, and feel. They should look for the specific, concrete elements that would help them to share the experience with their complete small group. After rereading what they've recorded, they should rewrite these perceptions in a paragraph, making sure to use the most sensory details.

Free-writing activity (individual and/or small group): Each student can recall a good experience in his/her life. He/she should

think back and focus on the sensory details of that experience and then write up this experience. When sharing these experiences in the small group, group members should concentrate on listening for sensory details and asking questions about any details they'd like to see, hear, or feel more.

Small group work: Students could read a section from their literature text. They should be allowed to pick any section their group likes, but it should not be more than two pages long. As a group they should take notes as to how many senses are present, at what points in the story the author chooses to describe sensory details, and what revisions they would make as authors if they thought more/less sensory details should be included.

More small group work: Students could write a paragraph on the sensory quality of something ordinary, for example, a fruit, vegetable, a T.V., refrigerator, sofa, sneakers, anything! Encourage them not to do it from memory but to get the object or get near it and write lists, sentences, phrases, and thoughts.

After determining the above activities, I explained the task(s) and the cooperative goal structure to the students. I emphasized that the group goal was to produce two group compositions which include sensory details about what they are describing. Besides including sensory details, I noted that the compositions should be as creative as possible. A group might decide to write a description without ever naming what they are describing or to build a story around the one main object. As a reader of these compositions, I would look mainly for sensory details. The compositions would be due in three days and all four or five names should be on the assignments.

I then passed out the following "Senses Perception" paper and the students began.

SENSES PERCEPTION PAPER

SIGHT

Describe details of your left hand (color, texture, size, shape, line, knuckles, fingernails, rings, hair, scratches, wrinkles, everything SEEable). Share these with your group.

Pick another part of the body and do the same thing OR pick out something outside the window or something in the room and describe all its details.

SOUND

Listen! Do you hear ANY kind of machine? If so, listen and jot down EVERY word that comes to mind as you listen. Unusual words are fine. Then put the sounds into complete sentences. Did you each hear the same machine? The same sounds? Did you hear cars outside? Computers inside? Lawn mowers? Snow blowers?

SMELL

Describe a smell, but don't define where it actually came from. See if your language is explicit enough to define the smell. Exchange your description with someone in your group, and see if that person knows what smell you are describing. See if you know what they are describing.

TOUCH

Touch something. Describe it (verbally) in new detail. Keep touching until you come up with 10 to 20 sensations.

TASTE

Write about tastes, NOT reactions, as you slowly eat hard candy, the first bite of gum, a swallow of lemonade, toothpaste the morning after pizza. Find words and phrases that say the ACTUAL taste, NOT the commercial words!

As stated in the guidelines, during the activity the teacher should observe interactions between students, possibly presenting this data to the students at a later date. The teacher should encourage the groups to "consult" with him or her at any time during the activity.

While I will not detail my steps in developing this next activity, the following are the objective and tasks for a group activity adapted from Elbow's text *Writing With Power*.

LOOP WRITING PROCESS = CONTROL AND CREATIVITY

Objective: Students will experiment with the loop-writing process by discussing the different approaches to writing and choosing several to try. They will discover how different perspectives can lead to richer compositions.

Tasks:

1 Determine a common subject which your group would like to write about It will help if the topic is somewhat controversial.

2 Read the 13 procedures which can be used when loop writing

3 Choose which procedure(s) your group will follow as you write

4 Write individually following the chosen procedure(s).

5 At the next class period, each member should share his/her writing with the group following the usual peer feedback questions used in class

6 Taking parts of all the papers, revise and write one paper as a group This paper will be given to the teacher and other groups to read and react to

After discussing how loop writing can be used when prewriting for any paper, the teacher should give each group one copy of the "Tasks" and one copy of the following handout.

There are 13 procedures to the loop writing process

1 FIRST THOUGHTS

For 15 minutes, put down all the thoughts and feelings you have (not GOOD or TRUE, but FIRST!)

2 PREJUDICES

What are your biases? What is most satisfying? Find your point of view or assumptions, then jump into that point of view and write as prejudiced as possible

3 INSTANT VERSION

Write a sketch of your final piece Do this BEFORE too much thought

4 DIALOGUES

Do this if you have 2 or 3 conflicting prejudices Give each feeling a voice and have them talk to each other Arguments are fertile ground for new insights Use speech and talking language rather than "essay" language Generate tension and energy!

5 NARRATIVE THINKING

Write the "story" of your thinking Sometimes this helps you to "see" more clearly.

6 STORIES

Let stories and incidents come to mind and jot them down. What stories strike you when you think of your subject/topic? What are any memories or experiences you have that relate to this topic?

7 SCENES

Stop time Focus on individual moments What places, moments, sounds, or moods come to mind?

8 PORTRAITS

What people come to mind? Tell their qualities or characteristics

9 VARY THE AUDIENCE

Write about the topic to someone very different from the actual audience Write to a child or to someone with the opposite view VISUALIZE your audience, write TO them

10 VARY THE WRITER

Take an opposite view BE that opposite person and write a self portrait or self analysis

11 VARY THE TIME

Write as though you were living in the past or the future Or write to an audience in the past or future

12 ERRORS

Write down things that are almost true or trying to be true

13 LIES

Write down odd or crazy things you come up with You'll discover important assumptions or preoccupations

In the past I molded writing activities into a kind of win lose struggle which showed whose writing was "best." If I attempted a task which utilized group interaction, its finale invariably became a contest where each individual student either "made the grade" or "fell further behind." Instead of continually promoting this struggle, cooperative learning groups are another means of providing challenges to a student's present knowledge. By observing more mature reasoning, a student gains a more mature process of reasoning and thinking By using these activities as a guide toward having students write collaboratively, students gain in their ability to work with writers and audiences other than the teacher. A student needs repeated experiences where he or she is forced again and again to see the perspectives of others As a means toward better communication and better writing skills in the future, I urge you to follow these guidelines and develop cooperative learning group activities as part of your curriculum

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WORKS CITED

The following works cited in the article plus added citations should be helpful in providing more information on how to construct and implement cooperative learning/writing groups in your writing curriculum

Beach Richard *Teaching Composition and Communication in the Secondary School* Minneapolis University of Minnesota 1981

Elbow Peter *Writing With Power Techniques for Mastering the Writing Process* New York Oxford University Press 1981

Holubec Edye Don't Reinvent the Wheel Use Cooperative Learning to Structure Student Student Interaction in Writing Classes In *Proceedings* Ed Keith C Odom Conference of College Teachers of English Texas 1983 1 5

Johnson David *Educational Psychology* Englewood Cliffs N J Prentice Hall 1979

Johnson David Group processes Influences of student student interaction on school outcomes In *The Social Psychology of School Learning* Ed James McMillan New York Academic Press 1980 123 168

Johnson David and Roger Johnson *Learning Together and Alone* Englewood Cliffs N J Prentice Hall 1975

Johnson David and Roger Johnson The Socialization and Achievement Crisis Are Cooperative Learning Experiences the Solution? In *Applied Social Psychology Annual 4* Ed L Bickman Beverly Hills CA Sage Publications 1983 119 164

Johnson David et al Effects of Cooperative Competitive and Individualistic Goal Structures on Achievement A Meta Analysis *Psychological Bulletin* 89 (1981) 47 62

Johnson Roger and David Johnson Cooperation in Learning Ignored but Powerful *Lyceum* 5 (1982) 22 26

Lyons Virginia *Structuring cooperative learning The 1980 Handbook* Minneapolis MN Cooperative Network 1980

Macrorie Ken *Telling Writing 3rd Edition* Rochelle Park N J Hayden Book Company Inc 1980

Mellon James *Teaching the Universe of Discourse* Boston Houghton Mifflin 1968

Rackham Jeff *From Sight to Insight Steps in the Writing Process 2nd Edition* New York Holt Rinehart and Winston 1984

Roy Pamela *Structuring cooperative learning The 1982 Handbook* Minneapolis MN Interaction Book Company 1982

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Teacher Feature

Creating a Caring Classroom Community

Mike Perry,
Grade 5 Teacher
Comstock North Elementary School
Comstock, Michigan, U.S.A.

Interviewed by Nan Graves

During his 20 years of classroom experience ***Mike Perry*** *has taught all grade levels through High School. For 12 years he has been creating the kind of cooperative classroom community later termed "Our Classroom" by Chick Moorman and Dee Dishon , and was one of the teachers who inspired some of the methods cited in their book (see review page 29). Three years ago he received an Excellence in Education grant for Cooperative Learning training, and as a project for that grant has made a video tape of his cooperative learning work in the classroom for use by district teachers. He has been teaching fifth grade for the past nine years.*

How did Mike become involved in creating the caring classroom community feeling that is so important in his teaching today, I wondered? He explained that he had wanted to develop a family atmosphere in his classroom and found this very difficult in the high school situation. Having also taught in middle school, he was bothered by how kids treated one another, especially those who couldn't afford expensive kinds of clothing. "I felt there just had to be a better way. I really see my main goal as preparing these fifth grade kids to get along next year in a middle school setting: to be resilient, and compassionate."

We discussed the concern some teachers had that children accustomed to cooperative groups in elementary may feel lost without them in a middle school where cooperative learning is absent. Mike felt students would be better off, even with one experience of a cooperative classroom community. "Self esteem is the whole issue. I have a boy this year who is absolutely clueless when it comes to making friends. At our middle school we have a full time Special Ed. Teacher hired just to teach kids how to get along with each other. I can think back on my own fifth and sixth grade experiences. The little pieces of success I had hung with me forever."

Forming Community

Mike Perry did not *start* elementary teaching with Fifth Grade. His methods for creating community began in his fourth year of elementary teaching when he was given a Grade One-Two-Three Split. With such a mixture of ages and grade levels it became essential, as in the old one-room schoolhouses, to foster a family feeling. "It was difficult for me," he admits, "because I wasn't all that experienced yet. But I found that teaching them they could all relate to one another was extremely helpful. We called ourselves 'The Banana Splits'." And thus began his twelve-year tradition of having the students name their class.

"Do you usually *begin* the year with the class naming itself to create that 'Our Classroom' feeling?" I asked. "Not at all," he asserted. "As I said in the *Our Classroom* book, naming a class is like naming a baby because it's something you have to live with for a long time, and you don't want to make a tragic mistake.....My current class is just starting to work on our name now (in November)."

I asked what process he went through to develop the class name. "It usually evolves," he replied. "To go back to the baby analogy, you think about various names for a child but you change your mind a lot in nine months. When we talk and laugh and joke during our daily sharing time, the name eventually evolves out of our being together. I don't expect it to happen right away. It's not going to be a unified family by the 26th of September. It may take 'til the first of March, but eventually we're going to feel that way."

"So what *do* you do to help the class get to the point where they feel like a unified group?" I asked.

Mike described his unique method for helping students realize they will need to learn to cooperate in his class. On the first day of school, after counting off by seven's to seat students in seven groups of four, he draws a large picture on the chalkboard of himself and his family on a boat with a shark following them and tells a story about it . He then divides the picture into four quadrants with the middle vertical line dividing his figure in half. Every child is given a paper and each in the group of four is told to draw a different quadrant of the picture.

At this point the children treat this as an individual assignment, each working entirely on his or her own. After they finish, the teacher then asks each group to put the picture back together, and "they find they haven't cooperated. Nothing matches up. Then they start buzzing with one another and start realizing that since they sit by each other if they put their papers together they'll be able to draw the waterline properly, make the two halves of my body the same size, and the whole will look like what I drew. I really like to watch that happen, because they *get* it, right away. I don't have any trouble getting them to put their heads together after that. They probably hadn't even thought of speaking to one another before, so that's my first little step toward breeding unity."

Mike said he was a firm believer in using seating to affect the quality of student interaction. "The kids know they're going to get a new seat on the first school day of each month. I have a technique where I write the seating chart on the board with empty boxes and number them. Then I have the kids pick a number out of a hat, and whatever they draw, that's where they'll sit for four weeks. If it turns out to be a really bad combination of people, we just have to work with it. They know that if I change anyone's seat it's an automatic phone call home. The other option would be that I assign seats, and they really prefer to take their chances instead."

In addition, Mike sets the tone for the class by modeling an atmosphere of personal interest, concern for other's feelings, and light humor: "I try to help them see how much they have in common with each other. I try to let them know how proud we are of ourselves. I try to get involved with what they are doing in their lives: hockey, ballet, whatever. I tell them up front I'm going to tease them, but that not in a mean way. That if I ever hurt their feelings I would feel very bad. And I try to let them know when I see *them* being kind to other people." In daily class meetings and other impromptu gatherings, Mike and his students just drop everything and talk, practicing listening and attending skills.

Other activities in Mike's classroom help students get further acquainted. "One of the first things I do with my children is a silly little game I made up called 'Stand Up'. It's a chance for kids to see what they have in common with other kids in class. I could say 'raise your hand' but that doesn't have very much impact. They love to pop up when I say 'Stand up *if* you share a bedroom with a brother or a sister...*if* you have an electric garage tool...if you are willing to eat tomatoes. I hate lima beans; so stand up if you like lima beans. We play a couple of times a week and they take turns with me thinking up categories."

"**'Author's Corner'** is when we do our creative writing every day. The students are permitted to use other people in the room, including me, in their story, but they have to get permission first from that person and tell them what they're going to do with them in the story. I see kids that normally wouldn't approach anyone now inviting others to be in their stories. Then right after lunch they can read their story if they choose, and we applaud and comment on the story. You should see their faces when they are in somebody's story whom they don't normally talk to."

Mike follows the same pattern when giving sentences for spelling. "Rather than give those boring sentences in the textbooks, I put the *students* into the sentences. We also do goofy little things like memorizing each other's middle names. Then the next day no one is allowed to call anyone else by their first name. It's amazing, they can memorize the names in no time."

Another kind of story the class does together is **"Circle Stories"**. During the Christmas season the class Christmas tree is placed in the middle of the room and students pull their desks around it and either lie beneath them or sit on top. Each person gives one sentence to build the story as it travels around the room.

"We're doing a **bulletin board with baby pictures** from below the age of three right now. It gives the kids a chance see what the others looked like and guess who the others are. And we also have a Student of the Day; that way I don't ever seem to show favoritism, and everyone gets a chance to be special."

Mike explained his philosophy of **class management**. "I'm basically a friendly guy, and they know what I expect in my classroom. I don't have a hundred rules. I have no put downs allowed, and no hurting anyone else, physically or verbally, and that's it. I'm also a 'Workshop Way' teacher, and I use that to build unity. Essentially, in using this approach you allow a fair amount of movement, freedom from fear, and students can ask a friend for help when they're stuck. I've been at this a long time, so I can tell when somebody's abusing the privileges... I use a lot of humor and try to encourage and spontaneously reward them when things are going well. A lot of teachers will write the word 'recess' on the board and start erasing the letters when the kids are bad. I personally think it's better to add stuff when they're being good."

To help parents understand his philosophy and the cooperative learning methods he uses in his class, Mike holds a parent meeting in the fall. "I lay it all out, hold up the Dishon and Wilson O'Leary book and the articles from *Educational Leadership*, and I tell them what I'm going to do and what I hope to accomplish with it. No one argues with me because there isn't a parent there that doesn't want their kid to be able to get along with other people."

But he also knows this can't happen overnight. "I try to be as patient as I can," he explains. "Slow and steady wins the game. I don't expect any miracles when I attempt to build a family feeling in the room. Some days it's one step forward and three steps back. But by the end of the year I feel pretty good about it. And so do the kids.

"There's a heck of a lot more to school than knowing the difference between an adjective and an adverb. You want people to relax, lighten up, have a good time and learn *that* way. If they don't learn their times tables by the 22 of September, they probably will have them by the 22 of April. And you don't need to hound them to death to accomplish that."

I mentioned the range of feelings among teachers about filling the surrogate parent role. "Yes," he said, "I'm with these kids about six hours a day. For probably a third of them that's more than they see their own mother or father. And I tell them the first day of school right up front: 'I'm your extra parent.' Even when I was young, my father worked second shift and came home at 11 o'clock so I can sympathize with what some of them are going through."

Exploring Community

The Workshop Way program also has a sequenced order of projects for children to do together, such as partner reading, review work in English and Math, and life skills work with job applications and phone books. Mike begins with these small group projects, allowing his students to take timers and set them for the amount of time they need for each project.

I asked how long he waited before beginning academic work in the small groups. He said he introduced it after about three weeks, beginning with something basic like spelling, vocabulary words, or review work. "I also use cooperative learning at this time to teach and process the social skills and to teach them to get along with one another." He feels it is important to monitor the groups to be sure the skills are being practiced. He keeps groups together short periods of time ("Four weeks is tops."), the amount of time depending on the project. He focuses especially on students having to rely on someone else to succeed, and roles for each person are an essential ingredient in his teams of four.

When the class has social affairs at Halloween or other holidays, Mike forms committees. "I don't do anything in the classroom without a team" he told me. "I make my party committees as large as possible. People are working as a team but each person has a certain responsibility." Different teams of students are responsible for each holiday event.

Productive Group Work

Students' abilities to coordinate efforts in Mike Perry's classroom are then tested by various group projects In addition to implementing many varieties of cooperative learning

(Johnson and Johnson's Learning Together, Johns Hopkins' Team Learning, and Jigsaw), Mike uses other programs with his cooperative groups. One of his favorites is an ingenious sequence of increasingly difficult problem-solving projects called "Odyssey of the Mind", a program for "Thinking Teams" developed by Dr. Samuel Mickles in New Jersey. Seven different problems are given to classrooms who join a nationwide contest. Problems may require students to decide how much weight can be put on a structure of balsa wood, dramatize an Aesop's fable, or replicate a Remington painting with a student tableau, make the painting come alive and tell a story, then freeze back into a painting. Mike feels these curriculum units build unity as well as stimulating thinking and collaboration.

"I am a great believer in drama: plays, skits and choral reading" he remarked. "It's very unifying, and I do it all the time. The class name for last year, "The Grapevine Connection", came out of a play we did about how people communicate." Students developed not only the play but T-shirts with a special logo for the class.

"With the exception of writing, I pretty much drop English by the middle of April and really zero in on the play" Mike explained. "We all work on it and everybody has a job By April I know who's going to want to be stagehand and who will be assistant director, who's going to run the sound machine, and so on. The whole class becomes a film crew. Then we video tape our plays and put them on cable access here for the wider community to see them.

Community Outreach

Mike establishes a tutoring program with his class and two first grade classes, and hopes to add a kindergarten class. Two teams of fifth graders leave the room during the first fifteen minutes of classtime on two days per week to work with the younger children. Student teams plan what they're going to do and which kids they are going to tutor that day on their own during their lunch recess the day before. Mike sets up tutoring teams which are heterogeneous with respect to academic achievement and socio-economic states and changes them after about two weeks. He finds this increases his students' ability to collaborate in many other ways.

He also collaborates in other ways with the teachers at his school and district, most of whom have not yet adopted cooperative learning. He team-teaches, works closely with a P.E. teacher, and provides inservices on cooperative learning for colleagues in all the elementary schools in Kalamazoo. He feels these collegial activities provide his students with a good model of adult cooperation.

Summing up Community

At the end of the year, the class puts on their special play, invites parents and friends, and has a bar-b-q or pool party. The parent study group donates a huge sheet cake, and students autograph the yearbooks, have corsages. "It's almost like a graduation party," Mike notes.

"You know," he mused, "since I've gotten into this way of teaching I've begun to accept people more than I used to. I've had to think about it so much, planning how I could get people to get along and feel good about themselves, cooperate, be friends. The more you think about it the more it seeps through to you.

"I went through a stage in my teaching career – my seventeenth year – when I'd had it. Now I feel rejuven-ated. Once I embraced a new philosophy and understood what it was supposed to accomplish, I realized I didn't have to drill kids all the time and have my thumb down all day long. I could zero in on behaviors, and all of a sudden I felt more professional. I felt this was what I was getting paid for. A good teacher is like an airline pilot. The plane will fly itself. You get paid for monitoring things and making the important decisions.

"You've seen cooperative learning that doesn't work, I'm sure. But if I can help everybody feel this is *our* classroom, *our* little family, that's like a catalyst for cooperative learning – a little grease on the axle and then they can collaborate." ■

a new contributor

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Cooperative learning:
Instruction and procedures to assist middle school teachers

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A teacher of a sixth grade class finishes the unit on health and nutrition and breaks the students into groups for the cooperative learning activity. As the students are getting into their groups, the assignment is given. The assignment is to develop a plan to change students' eating habits. The teacher suggests ideas and different approaches to the assignment and tells students to begin. Chaos ensues--students socialize, noise increases, questions persist, the bell rings with no results. The students go to the next class leaving the teacher frustrated, tired, and determined to never use cooperative learning again.

From this real vignette we may learn that in order for cooperative learning to be successful it must come with a set of instructions and procedures. As more and more middle school teachers use and improve cooperative learning experiences, instructions and procedures can be developed to support this learning activity and ensure high rates of success.

Role of cooperative learning

Cooperative learning in the middle school is an effective teaching strategy to accomplish instructional objectives. Johnson and Johnson (1987) have written much on the subject of cooperative learning and have discussed the tremendous potential that it can bring to today's classrooms. Jones (1990) suggests that cooperative learning is a developmentally appropriate and effective teaching strategy for middle level students. Middle school students can successfully participate in cooperative learning experiences that are activity or task-oriented if they are planned, well organized, and structured for learner success (Nickolai-Mays & Goetsch, 1986). Cooperative learning strategies are proposed as one way to ensure greater success in "effectively teaching students of diverse ability and differing rates of learning" (Carnegie Council on Adolescent Development, 1989, p. 50). Yet, this teaching strategy remains underutilized in classrooms and its potential undermined by teachers.

The teacher's role in competently facilitating cooperative learning activities is critical for success. Talmage, Pascarella, and Ford (1984) have conducted research on the influence of cooperative learning strategies on teacher practices and have concluded that "teachers may need extended experience with cooperative grouping before its influence becomes manifested in classroom environment and learning outcomes (p. 175)." However, experience alone may not increase the use of cooperative learning. It may, possibly, eliminate its use as an effective teaching strategy. Experience must be supported with specific practices that will ensure success when using cooperative learning activities in middle school classrooms.

Instructions and procedures to facilitate cooperative learning

Step by step procedure is presented below and should be followed in that order:

1. Provide specific and simply stated directions.

Put directions into an organized form. For example, list the directions in steps. Directions having more than three steps should be on a poster, chalkboard, hand-out, or transparency in order to expect and maintain on-task behavior. The students can refer to the directions if needed.

2. Teach the steps one at a time with discussion, explanations, and examples.

Teachers can refer to this as the "give and get" process. The teacher needs to give directions and get the directions back from the students. Ask certain students by name for the steps or ask a student to summarize the directions. Many times a student can put directions into simpler

form and enhance students' understanding of the assignment.

3. Establish a cue which tells the groups to stop and shift their attention to the teacher.

This cue allows the teacher to reduce confusion, to lower noise, to note progress, or stop the activity. If the activity is chaotic and heading toward failure, the teacher should stop the class and discuss what is happening and what needs to be corrected. The teacher then has the choice of continuing the activity, stopping it for the day, or not continuing at all.

4. Set a time limit.

A time limit of 15-30 minutes can be given for completion of tasks. Time intervals can be used to assess progress. Students can report and discuss their learning. Always provide a one or two minute warning to enable the students to finish their last efforts.

5. Ensure student and/or group accountability and productivity.

Inform students of your expectations and the method of evaluation. Answer questions such as "Is the work to be turned in?" " How will the assignment be graded?" and, "How much does it count toward final grade?"

Once the teacher goes through the first five steps of this procedure it is necessary to ask students if there are any questions. If there are no questions, move to step six. However, if there are no questions and they get into their groups and the hands go up, use the cue, stop the activity, and reteach and discuss the instructions. This will reinforce teachers' high expectations for students.

6. Assign group members and give them a signal to get into groups.

The materials will be passed out to the groups that are ready to begin working. Remember not to group or hand out materials until you have gone through the steps above.

7. Give the students time to begin their work independently.

After a certain amount of time, the teacher can circulate from group to group to show interest in and monitor progress of the group. The teacher acts as a facilitator to the groups by listening, extending encouragement and offering suggestions.

In order for cooperative learning to be successful it must come with a set of instructions and procedures. The procedure outlined above has been developed to support the use of this instructional technique.

References

Carnegie Council on Adolescent Development. (1989). *Turning points: Preparing American youth for the 21st century*. New York: Carnegie Corporation.

Johnson, D., & Johnson, R. (1987). *Learning together and alone* (2nd ed.). Englewood Heights, NJ: Prentice-Hall.

Jones, M.G. (1990). Cooperative learning: Developmentally appropriate for middle level students. *Middle School Journal*, 22(1), 12-16.

Nicholai-Mays, S. & Goetsch, K. (1986). Cooperative learning in the middle school. *Middle School Journal*, 18(1), 28-29.

Talmage, H., Pascarella, E., & Ford, S. (1984). The influence of cooperative learning strategies on teacher practices, student perceptions of the learning environment, and academic achievement. *American Educational Research Journal*, 21, 163-179.

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a new contributor

Cooperative learning: Developmentally appropriate for middle level students

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Cooperative learning is becoming increasingly utilized by middle-level educators as an excellent alternative to whole-class expository instruction. The components of cooperative learning that make it effective are also those elements that make cooperative learning developmentally appropriate for young adolescents.

What is cooperative learning?

Cooperative learning has also been called student team learning or small group instruction. However, there are certain distinct elements that separate cooperative learning strategies from traditional group work. Cooperative learning groups are structured for positive interdependence to ensure that every student has a role or task and is held accountable for completion of the task (Johnson & Johnson, 1987). In traditional learning groups there is often a single group captain or leader. In cooperative group work, all students are held responsible for encouraging and helping each other learn. Many teachers actively teach cooperative social skills to encourage the groups to process their effectiveness and set collaborative goals. In addition, there is often a group reward or recognition for team success.

There are three commonly used types of cooperative learning: student teams achievement divisions (STAD), teams-games-tournament (TGT) and jigsaw (Slavin, 1986). In student teams achievement divisions the teacher provides traditional instruction; then teams of four or five students study together and each person takes an individual quiz. Each student's score is compared to his or her own previously determined average and points are given for improvement. The team that achieves the most improvement points receives recognition through a newsletter, bulletin board or other reward.

Teams-games-tournament (TGT) is similar to STAD, with teacher presentation and team study. However, after team study, the students are arranged in academic tournaments with students from other teams; the points earned during the tournament contribute to each team's score. The teams with the highest scores receive rewards and recognition.

Jigsaw is another commonly used cooperative learning method. In jigsaw, each student on a team is assigned a section of the material or unit in which to learn and become an "expert." Each student has a chance to meet and study with students from other teams who are also studying to be experts on their topic. The "experts" then return to their team and present the topic to the other students. Finally, students take individual quizzes and receive improvement scores. The team with the most improvement earns recognition.

Goals of middle-level education and cooperative learning: a winning combination

"Successful programs match effective instructional techniques with young adolescents' developmental needs" (Davidson, 1989, p. 5).

It is becoming increasingly apparent that cooperative learning is a highly successful pedagogical technique for early adolescents. A close examination of the goals of modern middle schools and the foundations of cooperative learning reveal that the two are highly complementary. Cooperative learning is developmentally appropriate for meeting the needs of middle grades students and can function as a viable element in the middle grades reform called for by the Carnegie Task Force on Education of Young Adolescents:

"Many large middle grade schools function as mills that contain and process endless streams of students. Within them are masses of anonymous youth....Consider what is asked of these students: Every 50 minutes, perhaps 6 or 7 times a day, assemble with 30 or so of your peers, each time in a different group, sit silently in a chair in neat frozen rows, and try to catch

hold of knowledge as it whizzes by you in the words of an adult you met only at the beginning of this school year. The subject of one class has nothing to do with the subject of the next class. If a concept is confusing, don't ask for help, there isn't time to explain. If something interests you deeply, don't stop to think about it, there's too much to cover. If your feelings of awkwardness about your rapid growth make it difficult to concentrate, keep your concerns to yourself. And don't dare help or even talk to your fellow students in class; that may be considered cheating" (Carnegie Council on Adolescent Development, 1989, p. 37).

Cooperative learning strategies address the concerns identified by the Carnegie Task Force by providing students with an opportunity to move around, discuss ideas and be a part of a familiar supportive group of other students.

Social and emotional development

"The goal of schools in the middle should be to provide for each student the opportunity to become self-directing and self-sustaining in a friendly, positive and encouraging atmosphere" (Alexander & George, 1981, p. 3).

"Every student must have the opportunity to know a variety of peers, some of them well" (Carnegie Council on Adolescent Development, 1989, p. 37).

Grouping students within small communities "allows the student to relate to a relatively small component of the total school" (Alexander & George, 1981, p. 147).

The middle years are a crucial period in adolescent development. The varied and extensive changes that take place mean that schools must provide a developmentally appropriate program to ensure social and emotional growth. Millions of young people are "at risk" of being unable to cope with the responsibilities of new relationships, new academic challenges and emotional upheaval. Extensive use of cooperative learning can provide students with a support system that encourages the development of self esteem and a sense of identity. Being part of a group of four or five other students that you know well can provide a structure for the development of a sense of belonging and can create an atmosphere of care and concern. Cooperative learning group members are taught to communicate ideas and feelings, ask for feedback and build a trusting climate (Johnson & Johnson, 1987). All students in the group are encouraged to develop leadership skills and responsibility. The team recognition and reward system inherent in nearly all cooperative learning strategies helps to ensure that even low achieving students have the opportunity to experience success.

utilizes peer interactions in a positive way. Either everyone "sinks" or everyone "swims." The rewards of the goal structure encourage students to pull together to achieve a common goal. Peer pressure can work to the advantage of the teacher and result in increased achievement. Teachers who use cooperative learning report that their students call each other at night to encourage school attendance, to offer help with homework assignments and to form study groups.

Goals of the middle school: "to build positive self-concepts," and "to help the pupil work with others and in so doing respect others as well himself" (Alexander & George, 1981, p. 37).

School programs should "...assist students in the development of attitudes, values and moral judgement" (Alexander & George, 1981, p. 58).

One of the characteristics of the early adolescent is a tendency to be egocentric. The use of cooperative learning with controversial topics can lead to creative insights and productive problem-solving. Students learn to clarify ideas and take the point of view or perspective of other students (Johnson & Johnson, 1987). This leads to a less egocentric individual and promotes the development of good citizenship. This ability to "put yourself in another person's shoes" seems to be a particularly desirable trait for those of us who live in a democratic society.

"Among middle school students, attention to group behavior is especially important since the peer group begins to emerge as a major influence on individual school behavior, offering for the first time a significant alternative to parental and other adult influences" (Johnston & Markle, 1986, p. 46).

Peers become increasingly important during early adolescent development. Many middle school educators have experienced the frustration of trying to promote and accomplish educational goals in the face of negative adolescent peer pressure. The impact of this type of peer pressure is evident in disruptive student behavior, drug usage and school vandalism.

One of the key elements of cooperative learning is the use of peer relationships to motivate and promote student learning. The positive interdependence structure of cooperative strategies *"... Heterogeneous grouping... is characteristic of the self-enhancing middle school"* (Beane & Lipka, 1987, p. 22).

There is a growing movement away from homogeneous grouping in middle schools. Many educators believe that grouping by ability creates a tracking system that creates negative and unrealistic self perceptions of students. Development during adolescence is highly variable, and tracking may not be an accurate and effective way to meet students' needs. Cooperative learning is founded upon a belief that all students are capable of growth and that heterogeneous grouping effectively promotes the achievement of all students. Team strategies such as teams-games-tournaments take into account differences between students and encourage individual academic improvement.

There is also evidence that cooperative learning modes of instruction are particularly effective with females and minorities. Owens and Straton (1980) surveyed students in grades 4 to 11 and found that girls prefer cooperative learning, whereas boys prefer competitive and individualized instruction. These gender preferences for learning modes are evident early in development and may be influenced by prior experiences in and out of school and by the media (Owens & Barnes, 1982).

Soldier (1989) has also advocated the use of cooperative education with Native Americans. Soldier maintains that cooperative learning is culturally relevant to the Native American way of life. Furthermore, she maintains that "cooperative learning appears to improve student achievement, and it also matches such traditional Indian values and behaviors as respect for the individual, development of an internal locus of control, cooperation, sharing and harmony" (Soldier, p. 163).

Physical development

"Middle school students need frequent opportunities for physical movement, and for the rest and the change of activity" (Alexander & George, 1981, p. 6).

When team learning is used with other instructional strategies, students are more likely to be allowed to move around. Desks may move from "frozen rows" to congenial arrangements of fours or fives. Students have a chance to talk or work face-to-face with others instead of continually staring at the backs of heads. Merely having the opportunity to interact with other students can be motivating and energizing.

Cooperative learning can also help with the self-consciousness and imaginary audience phenomenon (Farel, 1982) associated with concern about physical appearances during early adolescence. Merely being part of a small group, rather than a member of a large class, can build a more positive self concept and provide a feeling of acceptance.

Cognitive development

"Every student should have ample opportunities to develop decision-making and problem-solving skills" (Alexander & George, 1981, p. 16).

"Middle schools should have . . . a climate that enables students to develop abilities, find facts, weigh evidence, draw conclusions, determine values, and that keeps their minds open to the new facts" (Alexander & George, 1981, p. 17).

There is increasing interest in the role that peer interactions play in cognitive development. Vygotski (1962) suggested that there are two sources of knowledge: "gut" or intuitive knowledge and the formal type of knowledge that is learned in classrooms. West and Pines (1985) have indicated that cognitive growth occurs as students try to integrate and make sense of these two types of knowledge. Both types of knowledge are influenced by peer interactions. Vygotski (1962, 1968) also suggested that peer interaction is particularly important because peers are more likely to operate within one another's proximal zone of development. This is the distance between the individual's development and the group's problem-solving level. Slavin (1987) maintains that peer interaction is effective because students working within one another's proximal zone of development are able to model group behaviors more advanced than those they could perform alone as individuals. Piaget also advocated the need for peer interaction and the sharing of opinions (Cannella, 1988).

The verbalization that occurs in cooperative learning may prove critical to adolescent development. Driver (1987), Trowbridge and Mintzes (1988) and Jones (1989) have advocated the use of verbalization for changing misconceptions and increasing problem-solving skills. The Generative Learning Model proposed by Osborne and Wittrock (1983) calls for students to share ideas and challenge each other in order for conceptual change to occur. Durling and Schick (1976) reported that students who vocalized during problem-solving were more successful than those students who did not vocalize. In nearly every cooperative learning strategy, verbalization is an integral part of the learning process.

Merely being part of a small group, rather than a member of a large class, can build a more positive self concept and provide a feeling of acceptance.

Achievement

Numerous studies have supported the effectiveness of cooperative learning techniques. Eighty-three percent of the student team learning studies examined by Slavin (1986) reported significantly higher achievement for classes taught with cooperative learning than for those taught with traditional instruction. Eighteen studies of student teams achievement divisions also reviewed by Slavin (1986) found significantly higher gains for the STAD instruction than for traditional instruction. A meta-analysis conducted by Johnson, Maruyama, Johnson, Nelson & Skon (1981) of 122 studies completed between 1924 and 1981, found cooperative learning promotes higher achievement at all grade levels, subject areas and for those activities that require concept attainment, verbal problem-solving categorization, spatial problem solving, retention and memory, and motor performance. Other studies since the Slavin and Johnson, et al. have continued to report the benefits of cooperative learning on student achievement.

Conclusion

Strong evidence is accumulating to support the premise that cooperative learning is a developmentally appropriate and effective teaching methodology for middle level students. The varied development of the early adolescent, along with the strong drive for peer interaction makes team learning an impressive pedagogical tool. Middle school students face a rapidly changing society, and many are "at risk" of not reaching their potential. Schools can meet this challenge by using cooperative learning to create pockets of accepting and supporting peers who encourage, challenge and help each other.

References

Alexander, A., & George, P. (1981). *The exemplary middle school*. New York: Holt, Rinehart and Winston.

Beane, J., & Lipka, R. (1987). *When the kids come first: Enhancing self esteem*. Columbus, OH: NATIONAL MIDDLE SCHOOL ASSOCIATION.

Cannella, G. (1988, April). *The nature of dyadic social interaction producing cognitive growth in young children*. Paper presented at the meeting of the American Educational Research Association, New Orleans, LA.

Carnegie Council on Adolescent Development. (1989). *Turning points: Preparing American youth for the 21st century*. New York: Carnegie Corporation.

Davidson, N. (1989). *Cooperative learning in mathematics*. New York: Addison-Wesley.

Driver, R. (1987). Promoting conceptual change in classroom settings: The experience of the children's learning in science project. In Novack, J. (Ed.), *Proceedings of the 2nd International Seminar, Misconceptions and Educational Strategies in Science and Mathematics* (pp. 26-31). Ithaca, NY: Cornell University.

Durling, R., & Schick, C. (1976). Concept attainment by pairs and individuals as a function of vocalization. *Journal of Educational Psychology, 68* (1), 83-91.

Farel, A. (1982). *Early adolescence: What parents need to know*. Chapel Hill, NC: Center for Early Adolescence.

Johnson, D., & Johnson, R. (1987). *Learning together and alone* (2nd ed.). Englewood Heights, NJ: Prentice-Hall.

Johnson, D., Maruyama, G., Johnson, R., Nelson, D., & Skon, L. (1981). Effects of cooperative, competitive and individualistic goal structures on achievement: A meta-analysis. *Psychological Bulletin, 89*, 47-62.

Johnston, J., & Markle, G. (1986). *What research says to the middle level practitioner*. Columbus, OH: NATIONAL MIDDLE SCHOOL ASSOCIATION.

Jones, M.G. (1989). *Cognitive conflict and cooperative learning*. Manuscript submitted for publication.

Osborne, R., & Wittrock, M. (1983). Learning science: A generative process. *Science Education, 67*, 489-508.

Owens, L., & Barnes, J. (1982). The relationship between cooperative, competitive, and individualized learning preferences and students' perceptions of classroom learning atmosphere. *American Educational Research Journal, 19*, 182-200.

Owens, L., & Straton, R. (1980). The development of a co-operative, competitive, and individualized learning preference scale for students. *British Journal of Educational Psychology, 50*, 147-161.

Slavin, R. (1986). *Using student team learning* (3rd ed.). Baltimore, Md: Center for Research on Elementary and Middle Schools, The Johns Hopkins University.

Slavin, R. (1987). Developmental and motivational perspectives on cooperative learning. A reconciliation. *Child Development, 58*, 1161-1167.

Soldier, L. (1989). Cooperative learning and the Native American. *Kappan, 71*, 161-163.

Trowbridge, J., & Mintzes, J. (1988). Alternative conceptions in animal classification: A cross-age study. *Journal of Research in Science Teaching, 25*, 547-571.

Vygotsky, L. (1962). *Thought and language*. Cambridge, MA: MIT Press.

Vygotsky, L. (1968). *Mind and society*. Cambridge, MA: Harvard University Press.

West, L. & Pines, A. (Eds.). (1985). *Cognitive structure and conceptual change*. NY: Academic Press.

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Group Investigation Expands Cooperative Learning

Group Investigation harnesses students' individual interests and gives them even more control over their learning than other cooperative learning methods do.

In Group Investigation, students take an active part in planning what they will study and how. They form cooperative groups according to common interest in a topic. All group members help plan how to research their topic. Then they divide the work among themselves, and each group member carries out his or her part of the investigation. Finally, the group synthesizes and summarizes its work and presents these findings to the class (Joyce and Weil 1972, Sharan and Hertz-Lazarowitz 1980, Miel 1952, Sharan and Sharan 1976).

This method grew out of our interest in Thelen's (1960) group investigation model, "which attempts to combine in one teaching strategy the form and dynamics of the democratic process and the process of academic inquiry" (Joyce and Weil 1972). The basic features of Group Investigation are presented, in an early form, as "small group teaching" (Sharan and Sharan 1976). Sharan and Hertz-Lazarowitz (1980) refined the method and shaped its present form.

Stages of Implementation

Group Investigation is an effective organizational medium for encouraging and guiding students' involvement in learning. Students actively share in influencing the nature of events in their classroom. Also, by communicating freely and cooperating in planning and carrying out their chosen topic of investigation, they can achieve more than they would as individuals. The final result of the group's work reflects each member's contribution, but it is intellectually richer than work done individually by the same students.

In planning and carrying out Group Investigation, students progress through six consecutive stages. These stages can be compressed into a week or two, or they can be carried out over several weeks or even months, depending on the scope of the topic under investigation and the skillfulness of the students and the teacher.

The topic should be a multifaceted one, so that it will trigger a variety of reactions from the students.

Stage 1. *Identifying the topic to be investigated and organizing students into research groups*

STEP 1. This exploratory step may take two or three class periods. The teacher presents a broad topic to the whole class. The topic may be part of the curriculum or may stem from the students' interest or from a timely issue. Teachers should phrase the topic as a question: instead of presenting the topic "Arizona Indians," for example, the teacher should ask, "What can we learn from Arizona Indians?" or "How do Arizona Indians differ from Indians in other states?" This phrasing serves two purposes: it helps to define the scope of the investigation, and it sets the tone for inquiry.

The topic should be a multifaceted one, so that it will trigger a variety of reactions from the students. At this point, students are not expected to show what they know but what they *want* to know. Some students will ask questions based on their reading; others may ask questions related to their past experiences. If the teacher encourages diverse reactions, everyone will participate. Teachers should avoid imposing their own suggestions or rejecting students' questions.

The teacher can further stimulate inquiry by having students scan a van-

ety of sources: films, texts, picture books, magazines, articles, and so on. These materials might be displayed on a table so that students can examine them whenever they have free time. Perhaps a lecture on the subject or a visit to a particular site would be helpful—anything to acquaint students with the subject and stimulate their interest.

STEP 2. Now the students are ready to formulate and select various subtopics for inquiry. The teacher writes the general topic on the board and asks: "Now that you've looked at some of the references about this topic, what do you think you want to investigate in order to understand it better?" Selection of subtopics is done by cooperative planning, which can proceed in one of several ways (Gorman 1969, Miel 1952, Sharan and Sharan 1976):

- Each student raises questions that he or she would like to investigate. The teacher writes each suggestion on the board; or
- Students meet in buzz groups (four or five per group), and each group member expresses his or her ideas about what to investigate. Recorders in each group write down each idea and then report them to the whole class. A short class discussion results in a shared list; or
- Each student writes down his or her questions. Then planning continues in progressively larger groups, from pairs to quartets to groups of eight. At each step students compare their lists, eliminate repetitions, and compile a single list. The final list represents the interests of all participants.

STEP 3. The teacher makes all the suggestions available to the whole class, either by writing them on the board or by duplicating them and distributing a copy to each student.

STEP 4. The next step is to classify everyone's questions into several categories. This can be done by adapting one of the three methods outlined in Step 2. The categories are then presented as the subtopics for separate groups to investigate.

STEP 5. The titles of the subtopics are presented to the whole class. Then each student joins the group studying the subtopic of his or her choice. The teacher may wish to limit the number of students in a group or, if a particular subtopic is very popular, to form two or more groups that will investigate it.

Through discussion, group members exchange views about the scope of their inquiry. They clarify exactly what it is they want to investigate.

Stage 2. *Planning the investigation in groups.* Upon joining their respective groups, the students turn their attention to the subtopic of their choice. Together they formulate a researchable problem and plan their course of action. Group members determine which aspect of the subtopic each one of them, singly or in pairs, will investigate. In effect, each group has to devote an hour or two to its internal organization. Members have to decide how to proceed and what resources they will need to carry out their investigation.

As the teacher circulates among the groups, he or she can offer help to those who need it. Perhaps one group is unhappy with their original plan. Instead of insisting that the group stick to a plan that has proven uninteresting to them, the teacher can discuss alternatives and help them redirect their goal. Another group may have planned to tackle too many questions. Again, the teacher can help them formulate a more realistic plan.

Through discussion, group members exchange views about the scope of their inquiry. They clarify exactly what it is they want to investigate. One group member will serve as recorder and write down everyone's questions. The first time a class undertakes Group Investigation the procedure at this stage may be somewhat schematic. If there are four students in the group, there may be eight questions, which the students then divide among themselves. As the class becomes more comfortable with the process, it is not unusual for the group to start off with one idea and end up with quite another. Many teachers find it useful to have groups fill out a worksheet that structures the steps of this planning stage. Figure 1 is an example of such a worksheet.

Generally, groups find it helpful to have one member serve as recorder to organize their work. The recorder reminds group members what their roles are and what the deadline is for

Fig. 1. Sample Worksheet

Our Research Topic:
How did the different Indian tribes adapt their dwellings to their environment?

Group Members:
Bob, Spencer, Billie Jean, Shel, and Nancy

Roles:
Bob—coordinator; Billie Jean and Nancy—resource persons; Spencer—steering committee; Shel—recorder

What do we want to find out?
Bob and Nancy—How did the nomadic Apaches design their shelters?
Spencer and Billie Jean—In what way did hogans suit the Navajo way of life?
Shel—What kind of dwellings did the ancient Indians design?

What are our resources?
Under this heading the recorder will list the books to be read, the people to be interviewed, and the sites to be visited. Perhaps all five members of this subgroup will visit the same site and interview the same people, but each one will prepare specific questions and may turn to different reference material.

reporting back to the group. The recorder may also keep a record of everyone's progress. A coordinator (or chair) serves as leader during group discussions when everyone shares information and makes plans. The coordinator also encourages everyone to contribute to the group's effort.

A copy of each group's worksheet should be posted. In addition to serving as a reminder of what each group is doing, this display shows how the whole class works as a "group of groups." Each student contributes to the small group's investigation, and each group contributes to the whole class's study of the larger topic.

Stage 3. *Carrying out the investigation.* In this stage, each group carries out the plans decided on in Stage 2. Group members gather information from a variety of sources, analyze and evaluate the data, reach conclusions, and apply their share of new knowledge to "solving" the group's research problem. Each class period at this stage begins with the teacher's reviewing with each group what it plans to do that day. One or two group members may spend some time in the library, others may summarize their visit to a museum, while a few may interview a resource person inside the school. Or they may all view a filmstrip or read a relevant article. Group members discuss their work and help one another.

Groups may choose to have the recorder note their tentative conclusions, or each member may present a written summary of his or her findings. Groups carrying out their first investigations, especially in the lower grades, may simply have each member present a short summary or answer to the question that he or she investigated. With experience, this intergroup summary becomes a problem-solving discussion: the students continue to share information but go on to compare their respective findings and search for ways to apply them to their research problem. At this point experienced students will often "discover" a new problem that evolves from their discussion of their findings.

Stage 4. *Preparing a final report.* This stage serves as a transition from data gathering and clarification to the

How Effective Is Group Investigation?

Over the past 12 years, we have evaluated the effectiveness of Group Investigation in a series of 10 large-scale experiments. These studies encompassed many classrooms and hundreds of pupils and were conducted at different grade levels with different subject matter. Most of these studies required several years for training, implementation, and evaluation to be completed. By this thoroughness, we hoped to avoid the artificial character of many short-term classroom experiments whose results have limited applicability to real classroom situations. Here we highlight the main features of these studies and refer the reader to the relevant publications.

All of the research we carried out had to begin from scratch. Our aim was to implement cooperative learning in general, and Group Investigation in particular, as well as study various effects of the implementation. We first had to train the participating teachers in the principles and procedures of cooperative learning, because they were accustomed almost exclusively to whole-class instruction. In each study, we took steps to help teachers cope with their doubts and fear of failure, as well as with their need to change basic attitudes and skills. For instance, we set up small teams of teachers to provide mutual assistance in planning lessons in detail, observing each other's lessons, and giving each other objective feedback on what happened during the lesson. These "self-help" units proved invaluable for the teachers.

Academic achievement. Five of the studies assessed pupils' achievement. At both the elementary and secondary levels, students from the Group Investigation classes generally demonstrated a higher level of academic achievement than did their peers taught with the whole-class method. Moreover, students who experienced Group Investigation did better on questions assessing high-level learning, although on occasion they did only just as well as students from the traditional method on questions evaluating the acquisition of information (Lazarowitz and Karsenty 1989, Sharan et al. 1984a, Sharan et al. 1980, Sharan and Shachar 1988, Sharan and Shaulov 1989). Of particular interest are the findings from a study that analyzed pupils' spoken language (Sharan and Shachar 1988). Three groups of pupils (with six pupils per group) from each of nine 8th grade classes were formed at random and asked to conduct two discussions of 15 minutes each, one on a topic from their study of geography, the other on a topic from their history classes. The discussions were videotaped and analyzed by judges.

When they studied in Group Investigation classes, pupils from both ethnic groups in Israel (those whose families are from Western countries and those from Middle Eastern countries) used more words per turn of speech than did their ethnic peers taught with the whole-class method. Moreover, the lower-class Middle Eastern children (often considered to have limited language) who had studied in Group Investigation classes used as many words per turn during the discussions as did the middle-class Western students in the groups taught with the whole-class method. Pupils from both ethnic groups who had studied in Group Investigation classes participated with equal frequency in the discussions, but in those groups from classes taught with the whole-class method, the Western middle-class students dominated the discussions.

Social interaction. Data gathered on pupils' social interaction leave no doubt that whole-class teaching stimulates a great deal of competition among students while Group Investigation promotes cooperation and mutual assistance among them. Group Investigation even promotes positive social interaction among classmates from different ethnic groups (Hertz-Lazarowitz et al. 1980, Sharan in press, Sharan et al. 1984b, Sharan and Rich 1984, Sharan and Shachar 1988).

Group Investigation and teachers. One of our studies reported an in-depth analysis of teachers' reactions to an instructional change program to implement cooperative learning in three elementary schools (Sharan and Hertz-Lazarowitz 1982). Teachers expressed more positive attitudes toward their work following participation in the project: they perceived their schools as having a more positive climate, and they expressed less need to control their students' behavior all the time.

Another study examined the effects of Group Investigation on teachers' language when interacting with their students (Hertz-Lazarowitz and Shachar 1989). Twenty-seven teachers of 1st through 6th grade were tape-recorded several times during the first half of the year when they employed the whole-class method exclusively and several times during the second half of the year when they taught with the Group Investigation method. The researchers found that, during use of the whole-class method, the teachers tended to deliver long lectures, give students orders, ask questions that required short answers, use collective disciplinary measures, and praise the entire class as a unit in general terms. All in all, their speech was quite formal, even rigid, in nature. By contrast, when these same teachers used Group Investigation, their speech was more intimate; they expressed support for student initiative, encouraged communication among the students, gave students feedback about their academic work, and praised individuals for specific activities.

—Yael Sharan and Shlomo Sharon

presentation of the most significant results of the inquiry. It is primarily an organizational stage, yet it entails such intellectual activities as abstracting the main idea of the group's project, pulling together all the parts into an integrated whole, and planning a presentation that will be both instructive and appealing. Presentations can take the form of an exhibit, a model, a learning center, a written report, a dramatic presentation, a guided tour, or a slide presentation, to mention only a few options.

Some groups decide what their final report will be when they begin their work. Other groups plan their report in Stage 4. For still others, the report begins to take shape while they're involved in their investigation. A group studying the dwellings of Indian tribes, for example, constructed an Indian village as part of their inquiry and then presented it to the class. Students in a group inquiring into the life of an author waited until all their data were collected in order to prepare a short skit on the most important period of her life.

During the planning that groups conduct at this stage, students assume a new role—that of teacher. True, all along group members have been telling each other about their work and continually discussing what they did or did not understand; they have been tutoring each other every step of the way. But now they begin to plan how to teach their classmates, in an organized way, the essence of what they've learned.

When the teacher notes that the groups are nearing the end of their investigations, it is time to convene the members of the steering committee (who were chosen in Stage 2). The committee hears each group's plan for its report. The teacher writes down each group's requests for special materials and coordinates the schedule. With the teacher's guidance, the committee members make sure that the ideas for presentation are varied and clear and can indeed be carried out. The teacher continues in the role of advisor, helping the committee where needed, and reminding them that each group's plan should involve all its members.

In assessing learning in Group Investigation, the teacher evaluates students' higher-level thinking about the topic they studied.

Stage 5. *Presenting the final report.* The groups are now prepared to present their final reports to the class. At this stage, all the groups meet and reconstitute the whole class as a social unit. The schedule of presentations is posted, and each group knows how much time it has for its presentation. After each group's turn, the members of the "audience" voice their reactions to what they saw and heard.

Stage 6. *Evaluation.* Group Investigation exposes students to constant evaluation, by both peers and teacher. The discussions among group members at every stage of their work, as well as the meetings with the teacher, make students' grasp of their topic and of their work visible at all times. During the entire course of the inquiry, the teacher has many opportunities to form reliable judgments on the basis of frequent conversations and observations of the students' academic and social activity (Sharan and Hertz-Lazarowitz 1980).

In assessing learning in Group Investigation, the teacher evaluates students' higher-level thinking about the topic they studied. Evaluation focuses on the application of knowledge to new problems, the use of inferences, and the drawing of conclusions. In addition, the teacher evaluates the investigation process itself.

Alternatively, teachers and students can collaborate in order to evaluate learning. Each group can submit questions about the most important aspects of their subtopic. In a class of seven groups, for example, each group might suggest two questions. The final exam then consists of 14 questions. Each student answers 12 questions, excluding the two contributed by his or her group. After the exam, the teacher may ask each group to correct everyone's answers to the two questions it submitted. In this way the group serves as a committee of experts who evaluate their classmates' learning.

Students' affective experiences during their investigation are also part of the evaluation. Students should reflect on how they feel about the topic they investigated as well as about how they carried out their investigation. The teacher might ask the students to write a short summary of what they felt they learned about the topic and about how to increase their effectiveness as investigators. Or the teacher could conduct discussions in small groups to allow students to express their feelings about the content they learned and the process of learning.

Studying What Interests One Most

Why is Group Investigation so effective? First and foremost, it gives students more control over their learning than other teaching methods—even other cooperative learning methods—do. Students inquire into those aspects of a subject that interest *them* most. They raise questions that reflect their different interests, backgrounds, values, and abilities. These differences are the group's greatest asset: they ensure a wide range of knowledge and skills. The Group Investigation method provides an excellent structure for harnessing both these skills

and students' individual interests for fruitful academic inquiry. □

Authors' note This article is based on a chapter from our forthcoming book of similar title.

References

Gorman, A. (1969). *Teachers and Learners: The Interactive Process of Education*. Boston, Mass.: Allyn and Bacon.

Hertz-Lazarowitz, R., and H. Shachar. (1989). "Teachers' Verbal Behavior in Cooperative and Whole-Class Instruction." In *Cooperative Learning: Theory and Research*, edited by by S. Sharan. New York: Praeger Publishing Co.

Hertz-Lazarowitz, R., S. Sharan, and R. Steinberg. (1980). "Classroom Learning Style and Cooperative Behavior of Elementary School Children." In *Journal of Educational Psychology* 73: 97–104.

Joyce, B., and M. Weil. (1972). *Models of Teaching*. Englewood Cliffs, N.J.: Prentice Hall.

Lazarowitz, R., and G. Karsenty. (1989). "Cooperative Learning and Students' Academic Achievement, Process Skills, Learning Environment and Self-Esteem in Tenth Grade Biology Classrooms." In *Cooperative Learning: Theory and Practice*, edited by S. Sharan. New York: Praeger Publishing Co.

Miel, A. (1952). *Cooperative Procedures in Learning*. New York: Teachers College, Columbia University.

Sharan, S. (In press). "Cooperative Learning and Helping Behavior in the Multi-Ethnic Classroom." In *Children Helping Children*, edited by H. Foot et al. London: John Wiley and Sons.

Sharan, D., and R. Hertz-Lazarowitz. (1980). "A Group Investigation Method of Cooperative Learning in the Classroom." In *Cooperation in Education*, edited by S. Sharan et al. Provo, Utah: Brigham Young University Press.

Sharan, S., and R. Hertz-Lazarowitz. (1982). "Effects of an Instructional Change Program on Teachers' Behavior, Attitudes, and Perceptions." In *The Journal of Applied Behavorial Science* 18: 185–201.

Sharan, S., R. Hertz-Lazarowitz, and Z. Ackerman. (1980). "Academic Achievement of Elementary School Children in Small Group Versus Whole-class Instruction." *Journal of Experimental Education* 48: 125–129.

Sharan, S., Y. Bejarano, P. Kussell, and R. Peleg. (1984a). "Achievement in English Language and Literature." In *Cooperative Learning in the Classroom: Research in Desegrated Schools*, edited by S. Sharan et al., pp. 46–72. Hillsdale, N.J.: Lawrence Erlbaum Associates.

Sharan, S., S. Raviv, P. Kussell, and R. Hertz-Lazarowitz. (1984b). "Cooperative and Competitive Behavior." In *Cooperative Learning in the Classroom: Research in Desegrated Schools*, edited by S. Sharan et al., pp. 73–106. Hillsdale, N.J.: Lawrence Erlbaum Associates.

Sharan, S., and Y. Rich. (1984). "Field Experiments on Ethnic Integration in Israeli Schools." In *School Desegregation*, edited by Y. Amir and S. Sharan, pp. 189–217. Hillsdale, N.J.: Lawrence Erlbaum Associates.

Sharan, S., and H. Shachar. (1988). *Language and Learning in the Cooperative Classroom*. New York: Springer Publishing Co.

Sharan, S., and Y. Sharan. (1976). *Small Group Teaching*. Englewood Cliffs, N.J.: Educational Technology Publications.

Sharan, S., and A. Shaulov. (1989). "Cooperative Learning, Motivation to Learn and Academic Achievement." In *Cooperative Learning: Theory and Research*, edited by S. Sharan. New York: Praeger Publishing Co.

Thelen, H. (1960). *Education and the Human Quest*. New York: Harper & Row.

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Exerpt from Small-Group Cooperative Learning in the Classroom by Ruth Parker in the Oregon School Study Council Bulletin, Vol.27, No.7.

Experiences of Teachers Who Have Used Cooperative Learning

Not only does research support cooperative learning, but teachers also support this model. Carol Meyer is a fifth- and sixth-grade teacher in Davis, California, who has been using small-group cooperative learning in her classroom for a number of years. She separates the benefits of cooperative learning into two (sometimes overlapping) categories: benefits for students and benefits for the teacher. In terms of student advantages, Carol believes that the children are provided with a support group. The small groups provide safe opportunities for trial and error as well as a safe environment in which to ask questions or express opinions. She gets more student response as many students, who would not ask a question in front of 30 classmates, ask questions and suggest ideas in a group of 4. As each student brings unique strengths and contributions to the group process, Carol feels that small-group learning promotes respect for individual differences.

Another advantage noted by Carol is that the group acts as a motivator. There are many times that an individual student would have felt the task was complete until hearing a idea from another group member. Having more input and more ideas helps the learning "snowball." The quality and quantity of the thinking of the group far surpasses what the individual can accomplish alone. It's the group interaction that enhances the triggering of new ideas. While expressing her goal that, by the end of the year, all children in the class will be able to work cooperatively with each other, Carol uses a random procedure (a draw of the cards) to group the children. She feels that this randomness

reduces labeling in the classroom. Not only do children get to hear and have more ways to problem solve within a small-group structure, but each child also has many opportunities to be both a teacher and a student.

As teacher advantages, Carol suggests that with small-group learning she now has 8 groups rather than 32 students to make good contact with each day. In addition she has 32 aides in the classroom! Carol gets help with discipline (maintaining a cooperative atmosphere), as students have learned a "spirit" of helpfulness and cooperation. She also feels that her children are better listeners within a cooperative structure. When four children have tried to solve a problem together and finally raise their hands for her help, they are ready to hear her input. She suggests that she also gets good questions, as her students have learned that they can solve most of their questions within their groups. Perhaps most importantly, Carol says that the use of small-group cooperative learning in the classroom provides her with the opportunity to continue to be a learner. Her students are continually taking learning in directions she would never have imagined.

Ann Woeste, a fourth-grade teacher at Edison Elementary in Eugene, Oregon, began using small-group cooperative learning (Groups of Four) in her classroom this fall. Although she began using Groups of Four in her math classes, she finds the process easily adaptable to other curriculum areas, particularly social studies. Ann feels that the small-group structure extends children's resources, in that they are encouraged to share ideas and pool strategies. She cautions that it would be easy to try small-group cooperative learning in the clasroom one or two times and decide it doesn't work. Not only is the process new to the teacher,

but she found that the children, initially, didn't really believe it when she told them they were to cooperate on their work. She found that by grade 4 they already had strong ideas about "ownership" of ideas.

She suggests that the more you try small-group learning the easier it gets for both the students and the teacher. Ann feels that the group structure enables things to run more effectively and efficiently in her classroom. She finds it easier to make contact with her seven groups than with each individual student. Ann keeps desks permanently pushed together in groups of four, but changes groups approximately every two weeks. She says that this organizational structure has been helpful because whenever work is collected or supplies distributed each group selects one person to do the leg work for the group. Movement is reduced from 27 children to 7.

Cindy Ruptic, a fifth-grade teacher at John Tuck School in Redmond, Oregon, has also used Groups of Four in her classroom. According to Cindy:

> I have a group of students this year who really have a hard time staying "at task" when given choices within a long time framework (1 hour). Groups of Four has helped these students learn to monitor their time at task. It is neither I nor themselves who point out their off task behaviors, but a group of their peers. This seems to be a good "halfway" spot for these kids...not immediately under the thumb of an adult and yet not completely left to their own design. They are learning from their peers not only <u>how</u> to be at task, but also that working hard is something that is valued and respected by the group.

Cindy has used other groupings in her classroom, but finds that the randomness of the Groups of Four process has the advantage of freeing her students from stereotyping others in the class. "They like the 'magic' of the draw from the deck of cards or the pattern blocks.

Choosing the group is, in itself, a game for them. It's nonpersonal--I didn't make the group, they weren't not chosen--it's all in the draw."

Lewis Oatman, an elementary teacher in Madras, Oregon, suggests that when he first started using Groups of Four in the classroom (as part of an assignment for a course he was taking), he had some reservations and fears that it wouldn't work. Many of these fears, he says, have proven unfounded. One of Lewis' concerns was that his slower students would be left out and would not contribute to the group effort. In his words:

> The opposite, in fact, was true. Groups of Four develops a strong sense of unity within the group. I found that the slower and unsure student could and did become active in the group. They were included and their opinions were shared with other members of the group. In fact, I noticed that this unity carried over into other areas and even onto the playground. I saw a big change in the entire class and their feeling toward each other. There were less "put-downs" and the members of the class started listening to others. All students were able to express their feeling and their opinions.

Lewis also addresses the issue of noise in the classroom.

> The noise level bothered me at first. I had to accept the idea that there is noise and there is constructive noise which leads to learning. After twenty years in the classroom, it is very hard to change. When one is used to having the students in nice, neat rows, each working individually, change is hard to accept. Groups of Four allows the students to share ideas and to cooperatively solve a problem. I have noticed that what I thought was noise is actually learning taking place and ideas flowing from one to another. I don't have to spend my time being a policeman. I can move about freely, working with small groups and watching learning take place.

Lewis has also used groups to correct homework papers. He says, "I have found that I have less paperwork now. I have 5 papers to look at instead of 18. Therefore, my energy can be used in other ways. I still evaluate the learning. My students are learning that they are capable

of validating their ideas, and they are still achieving the desired goals established for them." Lewis stresses that small-group learning is not without its problems:

> Problems still come up and things don't go as planned. At least the groundwork has been laid to discuss and evaluate why certain things happened and what could be done to change. Groups of Four offers an opportunity for problem solving and for developing thinking, even if it is to say, "Hey, what happened? What caused the break down?"

Reluctance to try a new classroom structure, a common sentiment expressed by teachers, was described by Sharon Baird, an elementary teacher in Roseburg, Oregon. In a course paper she wrote after taking a course on mathematics and small-group cooperative learning, Sharon said, "I didn't want to take the class, and left several sessions less than happy....BUT somewhere along the way I got hooked....not by the instructor or the subject or even me. I got hooked because as I tried the ideas, they worked for the kids--all the kids, and in ways I never would have thought to challenge them."

Sharon comments that her high-achieving students sometimes had the most difficulty working within a group. These students are often used to being rewarded for the quick, right answers, and it often takes time before they are comfortable working cooperatively. Yet research suggests that high-achieving students make significant achievement gains within a small-group structure. Explaining a process to group members is most likely beneficial for these students who often rush through the process without "thinking."

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NASSP Bulletin, May 1991.

Summer School: Promoting Cooperative Learning

By Twyla L. Bright

Summer school can be trying.

You have a teacher who would rather be enjoying a break but needs the money, and students who would rather be out having a good time but need the credit.

Sometimes, summer school is a bit like the one-room school of yesteryear when more than one grade level of students are in the same room with the same teacher. This environment can be conducive to learning.

A small mid-western school district used a variation of the one-room school for their summer school program. This allowed the system to implement the program with less expense and still provide the students with the learning opportunities they needed.

The students were grouped according to grade level: grades 1-3, grades 4-6, and grades 9-11. The secondary students all needed credit in English and the elementary students all needed remediation according to state mandated standards.

Each teacher chose a type of cooperative learning to facilitate the learning required in the time allowed for this project. All three teachers agreed that improving self-concept would be a vital part of each program.

The secondary English class is described here.

The Students

The subjects were 26 students from three small, mid-western school corporations within the same county. All the students from ninth grade (7), tenth grade (11), and eleventh grade (8) were in one classroom with one teacher. The students had all either failed at least one semester of English or, due to scheduling conflicts, had failed to have the English credit they needed for their current grade level. The content of the course was suggested by the chair of the English department who indicated that the students should all be instructed according to the grade level they needed to make up.

The Procedures

The students were assigned to grade level groupings the first day of class. The tenth graders were divided into two groups; however, limited space prevented the division of the other two grade levels into smaller groups. Each group was assigned an area of the room and allowed to arrange their desks for maximum comfort.

The class as a whole was then given general directions on how to function as a cooperative learning group. They were told to choose a leader for the group each day. No person could be a leader a second time until every one else in the group had had a turn.

It was the leader's responsibility to guide the learning for the day and to keep the group on task. A consensus was to be used to determine what subject matter would be dealt with during any one learning period. The students were then given all the assignments they would need to complete to pass the class.

The next step was to determine where the students were in terms of self-concept and writing skills. The self-concept was determined by each student arranging 16 behavior descriptions in the order each felt best described him or her. They were to record this information and then use the same descriptions and arrange them in the order the student wished described him or her. Once again the information was recorded by each student.

The writing skills were evaluated by performance on a guided essay writing task.

Each day the class began with whole-class learning activities that required individual performance by the students and interaction among the class members as a whole. The last part of each day was given once again to whole-class activity. This activity was a listening response-writing activity. These procedures were used to maintain a sense of unity among the class and to provide opportunities for interaction among the various grade levels of the students.

At the end of each week the students were tested on the material they had covered that week. Weekly tests were created based on what a group reported to the teacher they had completed by the end of class time on Thursday. Each group took different teacher-made tests that were based on the material that particular group had covered. The students knew how much they needed to complete but they were allowed to set the pace.

The students demonstrated significant improvement in writing skills when tested at the end of the session using the same guided essay format. When the self-concept evaluation was given again there was no significant change. Students who successfully completed the course (24) said they had learned a lot. No student dropped out of the class.

Results and Discussion

The students were uncomfortable with group learning in the beginning. They perceived helping each other with the assignments as cheating. Reinforcement of cooperative behavior soon eliminated this anxiety and the students developed a level of concern for one another that even included calling a fellow classmate if that person was not present for class. Cooperative learning made this a safe, positive experience for the students and the teacher. The improvement in writing skills was based on peer interaction as well as teacher instruction.

The failure of the experience to demonstrate a marked improvement in self-concept was limited by several factors. Contact time was a limiting factor as were personal difficulties experienced by the students outside the school environment. The lack of familiarity with cooperative learning also served as a limiting factor. Once the students

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felt safe with this behavior they progressed successfully in their learning activities.

Students who collaborate can improve their achievement. Educators should allow this collaboration in the everyday classroom as well as in a special environment such as the summer school. Teachers need the support and encouragement of the administration to develop cooperative learning as an integral part of education.

Dispelling the Myth

Don't panic yet; according to the March 1991 Center for Demographic Policy's *CDP Newsletter*, it is a myth that by the year 2000 there won't be enough workers to pay Social Security for those not working.

The newsl[illegible]published by the Institute for Educational Leadership, Inc., reports that i[illegible]0 there were 16 workers for every retiree. In 1960 that number was down to 5 workers. Now it's 3 workers per retiree.

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SECTION 3

EVALUATION/PUBLIC RELATIONS

School tries new system of learning

By Elizabeth New Weld
GLOBE STAFF

NEWBURYPORT – A low hum fills Roger Gagnon's European history class where his high school freshmen work in threes.

One student in each trio reads aloud from a biography of Charlemagne written between 817 AD and 830 AD as the other two take notes. Each team answers questions such as "How did leaders hold power, make war and laws?" and make sure teammates understand the material.

On this day, they will move from Charlemagne to modern-day leadership and government before they write a paragraph comparing leaders President Bush and Saddam Hussein.

The hum escalates into a buzz as Gagnon prowls from group to group, answering questions, encouraging, commenting, like a chef stirring his pots.

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GLOBE STAFF PHOTO / JIM WILSON

Roger Gagnon, history teacher, in Western Studies class at Newburyport High School with freshmen students (left to right), Colleen Dow, Carmen Parisi and Kim Butler.

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Cooperative learning gets a tryout

■ LEARNING

Continued from Page NORTH 1

In Gagnon's sophomore American history class where the groups are in pairs, Lindsey Cummings, 15, and Erik Vose, 15, say they like working in small groups.

"It opens up a whole new perspective and makes it more fun," Vose says. With two people, they have more ideas, better answers and better grades, and "You learn better when you're teaching someone," Cummings said.

Gagnon is steering his classes through a cooperative learning session, one of several techniques gaining acceptance at Newburyport High School where a quiet restructuring aims to prepare students for the 21st century.

The school is part of the national High School Futures Planning Consortium exploring new education goals and techniques. The consortium comprises 23 other high schools, 22 in the United States and one in Hong Kong, principal Mary Larnard said.

Planning for schedule changes because students had too much free time led to being selected for membership in the consortium and an ongoing strategic planning council and restructuring.

"The point of the new structure is to eliminate tracking," said Larnard, referring to the practice of separating students into classes on the basis of intelligence test results and academic records.

Larnard, former chairwoman of the math department, is sparking changes in the high school at the instigation of Francis Bresnahan, superintendent of schools. Bresnahan says he was influenced by author Jerome Bruner, who wrote that any child can learn any subject with integrity. His interest in making changes was intensified some years ago when he heard teachers and administrators "talking about low-track kids as if they couldn't learn."

"Teachers who have taught and studied in tracked classrooms know it's not working," Larnard said.

"This is not developed overnight," said Bresnahan, who has been mulling the problem since he taught history and was principal of Newburyport High School. He hired Mariel McGrath as curriculum coordinator five years ago and assigned her to redesign the history curriculum and develop the principle of heterogeneity – the untracked classroom encompassing all students. The city's elementary and middle schools already have eliminated tracking.

McGrath said tracking is "based on a notion of intelligence as fixed and immutable, but it is fluid – you can't label anyone as smart or quick. Smartness is acquired through experience. It isn't just content – it's balanced with experience."

Eliminating tracking helps teachers change their expectations of students because, McGrath said, it "is a self-fulfilling prophecy."

Bresnahan is changing the prophecy. "I want to teach students how to think critically, to master the knowledge and speculate what it means – to argue and have good thinking. I want a community of scholars."

In Newburyport High School's community of scholars, there are no bells. "Everyone knows how to tell time," Larnard said, and all take responsibility for changing classes, part of the educators' goal to create an atmosphere in which students take responsibility for their own learning.

Gagnon, who is using cooperative learning for the first time this year, demonstrates how to nourish that responsibility. He approaches a sophomore duo working on the Missouri Compromise. "You're working alone, and he's working alone. You have to work together," he urges them. "Did you talk it over?" He turns to a visitor. "Kids have to make big transitions from other habits.

"Kids have to learn how to learn," said Gagnon. "I might feel better up there giving a lecture, but this way, they can't daydream. The more they work with the information, the more they learn it." He still gives short lectures but combines them with other methods.

"In a lecture," McGrath said, "you only get a 5 percent transfer of information. If you add demonstrations, you get 5-to-6 percent transfer. If you add feedback – talking while learning and coaching – you get almost 90 percent." Coaching, she said, is three-way: student-to-student, student-to-teacher and teacher-to-teacher.

Larnard gives her staff time to learn new methods and encourages them to understand their own learning styles and those of their students. Then she encourages them to adapt their lessons to appeal to each learning style.

"If you have a classroom with a variety of paths," McGrath said, "the slow learner won't be stigmatized.

The restructuring high school has a visible variety of paths: longer class periods, the Wednesday Revolution – ungraded intellectual rap sessions for students and teachers held weekly – and new courses combining disciplines such as American history and literature and algebra with an introduction to physical sciences, as well as cooperative learning and Paideia seminars.

The Paideia seminar is an educational technique advocated by scholar Mortimer Adler that uses Socratic dialogue and guided discussion of literature, poetry or works of art.

On the day Lynne Laffie's English seminar discusses the myth of Daedalus and Icarus, she and 23 freshmen sit in a large circle as students take turns reading the myth out loud. Anyone who hasn't read the text sits outside the circle.

Laffie is today's discussion leader. "What decisions did the father make?" she asks. "What way to go," says one student. "To defy the laws of nature," says another.

"Who's taking greater risks?" she asks. "The father – to lose his son," answers one. "To teach him to fly," says another. Answers come faster.

"Can anyone find a line about fate?" Laffie asks. The students bend their head to reread the myth. Using the primary sources is a principle of the Paideia seminars. "Not knowing he was dealing with his downfall," a girl reads.

"What do you think of when you hear 'risk?' They call out: "Dare," "failure," "courage."

"What are some risks you take?" Laffie asks. "Drinking at dances," "climbing a tree," they say. With Laffie, they conclude that making decisions involves risk and free will.

At the end, participants assess the quality of the questions and how the leader – not always the teacher – performed. "It helps the kids own the process," Laffie said.

Laffie and five other teachers were trained by Adler's associates to run seminars and train others who now use the technique in English and history.

Students like the seminar, Laffie said, because the format is not threatening and students do not have to speak if they do not want to. But they usually do. By the end of the class, energy was running high.

"With the text, we have accuracy," she said. "I lead them from the truths in the text to universal truths, and then we apply them to ourselves. I chose risk today because we are going to read 'Romeo and Juliet,' and we'll talk about the risks they took."

"Most teachers are reluctant to take risks," said Larnard, who encourages risk-taking and supports teachers who want to try new approaches. "We say to them, 'The class has to be quiet, and test scores have to be up. Now be creative.'

"This is an exciting time to be a teacher," she said. "It's wonderful to watch – and the school is not quiet anymore. It's very traumatic for some, and there is honest dissent to the idea." Nancy Duclos did not expect trauma because she had worked in a cooperative learning experiment last year, but she found herself reluctant to try having her 29 Algebra I students study in groups this year.

"I was panicked – I thought for sure I couldn't control such a large group." Her students' grades forced the issue: by the end of the first marking period, more than half were failing, she said.

She told her students they would be working in teams when they enter the work world as she formed teams of four. She put pressure on them to cooperate by grading their quizzes and classwork as a group. However, she continued to grade tests on an individual basis.

"They bought into it. I still have renegades and problems with some attitudes, and I still have to go around to the groups and remind them." Sometimes the grumbler is a student not doing the work and the others are angry at him, she said, and sometimes it is someone who wants to work alone. "But they have to deal with it themselves."

The hardest part for teachers, including herself, is giving up control, of being the focal point of the classroom, she said. But now that Duclos is used to it, she is uncomfortable when she lectures on new material "because I think they could be learning better from each other." With more complicated material, she uses groups every other day to reinforce the lectures. At least half of the 64 teachers at the high school are using some form of cooperative learning.

Duclos says she will continue. Near the end of the first quarter, only three students were failing and more than half had a B or better.

Gagnon and Duclos agree the method requires more paperwork and record keeping. But, said Gagnon who has taught history at Newburyport High School for 21 years, "how many times can you teach Napoleon? Cooperative learning is my salvation."

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Can Cooperative Learning Be Evaluated?

Yes, If the Observer Knows the Keys to Its Success

BY DAN WATSON AND LYLE RANGEL

A popular teaching strategy of the 1980s, cooperative learning, may continue well into the 1990s for three reasons:

- It improves academic performance for all students including minorities;
- It enhances ethnic interactions and reduces racial frictions; and
- It increases English language proficiency for English-as-a-Second-Language students.

Photo courtesy of Johns Hopkins University

Due to cooperative learning's popularity, site administrators now formally observe teachers who use some form of collaborative or cooperative learning in their lessons. Observing and evaluating a cooperative classroom, however, can challenge the site administrator. For one thing, at least nine different cooperative learning models are practiced today.

The big question administrators face is can teachers using cooperative learning techniques actually be evaluated?

According to Spencer Kagan, a professor at the University of California, Riverside, and one of the better-known advocates of cooperative learning, "Teachers using cooperative learning cannot be evaluated."

Kagan believes a teacher using cooperative techniques can be coached, but should not be evaluated.

We believe, however, despite the numerous models and Kagan's misgivings, evaluating teachers' use of cooperative learning can be done and done well if the evaluator knows what to look for.

Identify the Basics

Successful evaluation depends on the evaluator knowing the essential elements of the teaching strategy and comparing the known model with observation.

In cooperative learning, the most frequently used models have five common components: heterogeneous teams; teammate interdependence; interdependence of teams; accountability; and activity appropriateness. The administrator observing cooperative learning would be looking for these characteristics. Each is described briefly below.

- *Heterogeneous teams.* Teams should be composed of four to six members and represent a true cross section of the classroom. There should not be "high flyers" and "low flyers" teams. Instead, teams should be balanced by race, gender, and academic achievement.

In the classroom, the seating arrangement should encourage team members to interact. Teams should sit at common tables or with seats together, not in straight rows. Team identities or nicknames should be readily apparent.

- *Teammate interdependence.* Interdependence of teammates means

that the success of each teammate depends on the success of every member, that is, they sink or swim together.

When interdependence exists, students should be aware that they play a unique role on the team and that the team cannot succeed without their efforts. In almost any sport, each team member can identify their position. Students in a cooperative learning setting should be able to do the same. Team members should be able to state, "I'm the recorder," or "I can't do my step until Maria does hers."

Teammate interdependence can also be observed in student behaviors, such as working closely together; discussing what they have to do; completing drills and practices to increase accuracy; helping one another with the answers to questions; using materials together; and, most importantly, assisting each other to learn.

● *Team interdependence.* Not to be confused with interdependence of teammates, the various teams in the classroom should not be locked in a struggle to overcome their enemies—their classmates on other teams.

Through cooperative learning, team members learn while helping the team attain a simple goal—the academic success of its members. The goal is not to seek and destroy the competition.

As we've all seen, when kids compete in some sports activities, intense team competition can generate strong negative actions against the opposing team.

In the cooperative learning classroom, such competition can be detrimental. Rewards should be set up so the whole class is rewarded for combined achievements after an extended period of time. (A good example of this kind of reward is a thermometer chart used to gauge progress toward a particular goal.)

Students should also be aware that their current teams are only temporary. Teams should be rearranged at a maximum of every six weeks to allow extensive interaction among classmates and to avoid unexpected "unfair" teams from dominating.

● *Accountability.* One of the most talked about issues in cooperative learning is accountability of team members. Educators continually worry that one team member is going to do all work and the rest will ride on that person's coattails.

The classroom evaluator looks for two types of accountability. First, is the team rewarded for achieving a group goal? Rewards could include: single grade for the group's efforts; bonus points added to an individual's score when the group attains a specific criterion level; non-academic rewards for attaining a group goal; and team recognition for attaining a goal.

Second, is each team member held accountable? Each student is expected to improve in the task. Examples are: improvements on a criterion-referenced test from pretest to post-test; and grades given to individuals based on their score compared to individuals of the same "ability" level (rather than grade based on a whole class curve).

If students were observed riding on the coattails of a single person on many teams, a post-observation conference between the teacher and evaluator should be scheduled to discuss this problem.

A teacher allowing this to happen in the classroom might need more intensive coaching or directing to use specific cooperative techniques, such as Student Teams Achievement Divisions, Teams-Games-Tournaments, Jigsaw I or II, or Groups of Four. These structures are more specific in their organization and have proven successful in handling teams that turned into solo acts.

● *Activity appropriateness.* Though cooperative techniques have been used with almost every type of content lesson, not every task can be completed cooperatively.

For example, while cooperative techniques can be used to help stu-

Photo by C. W. Dean

Photo by Susie Fitzhugh © 1989

"...the success of each teammate depends on the success of every team member...."

dents become more accurate and quicker with math facts, using cooperative techniques during a timed math facts test probably wouldn't work.

Indications of inappropriate activities are: students spend the majority of time avoiding the task; students are unclear on what they are to do; students do not appear to have enough information to complete the activity; or students do not have the social maturity to deal with the complexity of the task they are assigned.

Photo by C.W. Dean

Photo by Susie Fitzhugh © 1989

Photo by Susie Fitzhugh © 1989

"...the amount of time the teacher is instructing should not dominate the class."

Other Essentials

Cooperative learning cannot replace direct teacher instruction in most educational settings. Teachers using cooperative approaches also need to instruct.

However, in cooperative learning, the amount of time the teacher is instructing should not dominate the class. The teacher needs to motivate learners, state the goals of the instruction, and teach the content.

The teacher should use guided practice to check for basic mastery of content and ask students to complete independent practice through cooperative learning groups.

Cooperative learning requires a definite shift in the role the teacher plays. During the instructional period, the teacher is the focal point and information flows from teacher to students. During the cooperative component, however, the teacher is a facilitator of students. Moving from group to group, the teacher acts as a resource to the teams. At the close of instruction, the teacher again dominates, seeking closure for the class.

Using cooperative learning is an excellent sign that teachers are keeping up with current trends in education. Without support and evaluation, however, a teacher may be implementing the technique incorrectly or failing to maximize its use.

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Resources

Burns, Marilyn. "Groups of Four: Solving the Management Problem." *Learning* 9:46-50, 1981.

Cohen, Elizabeth. *Designing Groupwork: Strategies for Heterogeneous Classrooms.* New York: Teachers College Press, 1987.

Dishon, Dee and O'Leary, Pat W. *Guidebook for Cooperative Learning: A Technique for Creating More Effective Schools.* Holmes Beach, Florida: Learning Publications, 1984.

Graves, Nancy and Graves, Ted. *Cooperative Learning: A Resource Guide.* Santa Cruz, California: International Association for the Study of Cooperation in Education, 1987.

Johnson, David W. and Johnson, Roger T. *Learning Together and Alone: Cooperative, Competitive, and Individualistic Learning* Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1987.

Kagan, Spencer. *Cooperative Learning Resources for Teachers.* Mission Viejo, California: Resources for Teachers, 1987.

Slavin, Robert E. *Using Student Team Learning.* Baltimore, Maryland: The Johns Hopkins University, 1986.

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The Cooperative Link, April 1989.

The Cooperative Link

Vol 5 No 2 | Published By The Cooperative Learning Center | April, 1989

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Greetings from the Johnsons . . .

The Cooperative Learning Center has been even more active than it wanted to be this year. Perhaps that's the price you pay when cooperation in the schools becomes popular as well as rational. Long-term (3-5 year) training continues across the US with Connecticut/New York/New Jersey and Washington/Oregon /British Columbia leading the way. Montreal has become active again through McGill University and overseas training is taking place in Saudi Arabia, England, Norway, and New Zealand. The DoDD schools in Panama have a textbook implementation in progress.

This issue of the Link emphasizes one of the common questions asked about heterogeneous, cooperative groups (primarily by teachers). There is an uncomfortable feeling about the possibility that the brighter student will be "held back" when he or she works in a cooperative group. It is interesting to note that achievement is not lost and is more likely to be gained, but we should all keep in mind that all students in America have the right to be included in and accepted (as well as celebrated) by their broader peer group. One of the more tragic mistakes schools could make is to isolate students from others because they are brighter in certain subject areas. Mainstreaming and integration are not something special for handicapped students or different ethnic groups. It is something we should do for every student. (For more on this subject, see our chapter, National Science Teachers Association Yearbook, 1989).

What To Say To Parents Of Gifted Students

One of the most often asked questions of teachers using cooperative learning is, "Doesn't cooperative learning with heterogeneous groups hold the gifted students back?" The answer from the research is clear. But parents of high-achieving students are often hard to convince. Some of the answers are obvious. Heterogeneous groups provided high-achieving students with greater opportunities to develop social skills, perfect leadership abilities, and become accepted, appreciated, and liked by their classmates. Parents, however, usually want an answer about achievement.

First, you set the stage by noting that high-achieving students should not always work in heterogeneous cooperative groups. There are times when gifted students should be segregated for fast-paced accelerated work. There are times when gifted students should work alone, individualistically, in isolation from all other students. There are times when gifted students should compete to see who is best.

Second, you state that in order to maximize the achievement of gifted students, most of the time they should be integrated into heterogeneous learning groups and work with a variety of peers. The reasons are found in the research.

There are numerous studies comparing the achievement of gifted students working individualistically, competitively, cooperatively in homgeneous high-ability groups, cooperatively in academically heterogeneous groups.

The results of these studies indicated that the achievement of gifted students is usually higher when gifted students work in:

- Cooperative learning groups (rather than individualistically or competitively).
- Academically heterogeneous cooperative groups (rather than academically homogeneous cooperative groups).

Learning with medium- and low-achieving peers rather than with all gifted peers seems to have academic advantages.

The most conservative thing to say is that the overall achievement of gifted students is not decreased and often increased by learning within heterogeneous cooperative groups. There are, however, a number of common questions that parents of gifted students may still ask you. The answers spring from the following findings based on a thorough review of the existing research (see our forthcoming research-review book):

- Gifted students use higher-level reasoning strategies more frequently when they learn in heterogeneous cooperative learning groups (for example, see our research with Linda Skon).

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- Learning material with the expectation that you will have to explain it to peers results in the more frequent use of higher-level reasoning strategies than does learning material to pass a test.
- Orally explaining the material being studied results in higher achievement than does listening to the material being explained or reading it alone.
- Cognitive growth requires social interaction and the collision of adverse opinion. Structured academic controversies within which a variety of perspectives are presented are essential for cognitive growth.

Here are the questions and the answers that current research now indicates.

Are there academic advantages of heterogeneous learning groups for gifted students?

Yes. First, learning material with the expectation of teaching it to others results in learning it at a higher cognitive level than does learning material to pass a test. Second, explaining the material to others increases the level of one's achievement, increases the level of one's cognitive reasoning, and increases retention. Third, checking the explanations of others for accuracy tends to increase the gifted student's achievement. Fourth, cognitive growth requires social interaction and the collision of adverse opinion. It is primarily through discussing material being studied and problems being solved in ways that provide disagreement and intellectual arguments among group members that cognitive growth, critical thinking, and higher-level reasoning is achieved. Intellectual conflict can be promoted through the use of academic controversy. The procedures for structuring academic controversies are covered in our training on the creative use of conflict within classrooms and schools (see Creative Conflict). Finally, viewing issues from a variety of perspectives promotes higher-level reasoning and general growth in cognitive reasoning. Gifted students gain cognitively and academically from working with a wide variety of peers who have different perspectives and take different approaches in solving problems and completing work.

Would the gifted student's achievement be higher if he or she worked only with other gifted students?

No, for several reasons. First, studies have found that fewer explanations take place within all gifted groups, which lowers the level of achievement and retention. Second, there may be less expectation that one will have to explain what one is learning to others. Studies have found that expecting to teach what one is learning to others (as opposed to learning it to pass a test) results in learning the material at a higher level of cognitive understanding. Third, Frank Murray found that a conserver who works with a conserver does not do any better on later conservation tasks than does a conserver who works with a nonconserver. An all gifted group seems to have no advantage over heterogeneous groups in terms of level of cognitive reasoning. And sometimes it does worse!

Are there academic disadvantages of heterogeneous learning groups for gifted students?

Perhaps. While the quality of learning is increased, the quantity may go down. Gifted students may produce less in terms of quantity as they spend more time in conceptualizing and cognitively networking what they are learning.

Does learning cooperatively with medium- and low-achieving peers decrease critical thinking and higher-level reasoning?

No. Just the opposite. Gifted students should not be burdened with long hours of drill and review and lower-level cognitive tasks. Their time should be spent primarily in conceptualizing, thinking critically, and developing higher-level reasoning strategies. Cooperative learning is the first step for doing so. Structured academic controversies are the second step. In both cases, heterogeneous groups are usually more beneficial for higher-level reasoning and cognitive growth than are homogeneous groups.

Do low-achieving students contaminate the achievement of gifted students?

No. Gifted students tend to benefit academically from working with low- and medium-achieving peers. Gifted students initially explain the material being studied and how to complete the assignment. The cognitive restructuring and practice that occur during the giving of explanations facilitates a more thorough grasp of the material and its commitment to long-term memory. A series of research studies by Frank Murray, furthermore, indicated that while the nonconserver learns to conserve as a result of working with a conserver, the conserver does not "unlearn" conservation. Cognitive growth seems to be unidirectional. In other words, when students at different levels of cognitive development work together, truth wins out. Cognitive development is not reversed.

When gifted students are separated for enrichment, are there any guidelines to ensure that the learning experience is optimal?

Yes. First, have the students learn in cooperative groups. Second, make the groups as heterogeneous as possible. Students can be gifted for many different reasons. Some students do well because they want to please adults, do everything right, and always work to complete extra-credit projects. Other students are gifted because they are creative risk-takers or because they are talented in a specific area, such as mathematics or writing. Within the limits imposed by the homogeneous situation, the

cooperative learning groups should be heterogeneous as possible. A student who is a creative risk-taker is a great learning partner for a student who wants to do everything right. Third, regularly structure academic controversies within the cooperative learning groups. The conceptual conflict resulting from being confronted with a variety of possible answers and points of view is essential for cognitive growth, critical thinking, and the development of higher-level reasoning strategies.

My child is very bright intellectually. But he/she is bored with and uninterested in school. What can be done?

In order for students to exert long-term, hard, persistent efforts to learn they must believe that there is a good reason for doing so. While there is probably an intrinsic drive towards competence, for various reasons schools have a hard time tapping into that drive for most students. What a teacher of an undermotivated gifted student can do is structure learning situations cooperatively so that students are expected to contribute to other students' learning as well as their own. Nothing motivates more than a sense of achieving a joint goal that is meaningful because it makes someone else's life better. When making a choice between watching TV and doing homework, a student may be heard to say, "My group's counting on me. I have to do my homework."

What should the school do to make sure my gifted child has a successful career?

Focus the gifted students on mastery (desire to tackle challenging tasks) and hard work, not on winning over others. Robert Helmreich and his colleagues at the University of Texas have studied competitiveness as a personality trait. They first determined that high achievers, such as scientists, MBA's, and pilots tend not to be very competitive individuals. High achievers in the real world of business, industry, and science tend to be low on competitiveness but high on the personality traits of wanting to take on challenging tasks and valuing hard work. They do not want to win over colleagues. The researchers found that competitiveness typically lowers job performance, as competitive individuals get so concerned about triumphing over colleagues that they ignore important aspects of their jobs, lack concentration and focus, lose sight of the "big picture" and overall goals, are very short-term oriented, and become distracted from the task at hand. Helmreich has not been able to identify a single professional arena where highly competitive individuals tend to be more successful. Similar studies of elementary, secondary, and college students (competitive students get lower grades) and of news reporters (competitiveness lowers job performance) found similar results.

Competitiveness, furthermore, lowers creativity. Creative performers and students who are competitive have been found to do less well on creative tasks than noncompetitive individuals.

Cooperative Computers

The work around the computer is likely to be much more cooperative if the following tips are used.

Assign small groups (2 or 3) to each computer.

Set a time limit to achieve established group expectations.

Assign a group to the computer with specific times they can work there. Using this technique, each group will be assured of having their time on the computer.

Begin with problem-solving activities which encourage group decision making.

Assign computer roles:

- Guide: Reads and clarifies directions and encourages all to participate
- Checker: Makes certain everyone agrees and encourages negotiation as necessary
- Recorder: Types what is agreed upon and includes the names of group members when requested
- Encouragers: All group members (emphasis is placed on the importance of this role)

Rotate roles as often as possible.

Seat group members in plain view of the monitor (a bench is ideal).

Locate the computer in a special section of the classroom where others might not be disturbed (a screen or divider works well).

↔ These ideas were contributed by Lorry Szumylo, Meadowbrook School, Hopkins, MN ↔

From Our Bookshelf . . .

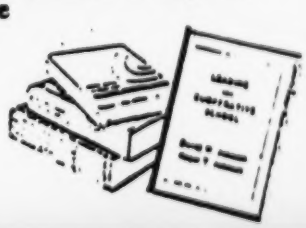
Leading The Cooperative School

This exciting, fresh approach to school leadership is the most recent of the Johnson and Johnson publications. The book focuses on the practical, including topics such as:

- Creating the cooperative school
- Promoting teacher expertise in using cooperative learning
- Supervising and supporting the use of cooperative learning
- Structuring effective colleagial support groups
- Structuring school-based decision-making groups

It is currently available through **Interaction Book Company [(612)831-9500].**

Persons interested in the topic of administration and cooperative learning are encouraged to consider taking the **Administrators Course** offered this summer through the Cooperative Learning Center.



SECTION 4

RESOURCES FOR COOPERATIVE LEARNING

The following list was compiled by Cooperative Learning Services of The NETWORK, Inc., 300 Brickstone Square, Suite 900, Andover, MA 01810, (508) 470-1080.

Resources for Cooperative Learning

Publications

1. Aronson, E., N. Blaney, C. Stephen, J. Sikes, and H. Snapp. (1978) The Jigsaw Classroom. Beverly Hills, CA. Saga.

1. Dishon, Dee and Patricia Wilson O'Leary. (1984) A Guidebook for Cooperative Learning: A Technique for Creating More Effective Schools. Holmes Beach, FL. Learning Publications, Inc.

3. Glasser, William. (1985) Control Theory in the Classroom. New York, NY: Harper & Row.

4. Johnson, David W., and Roger T. Johnson. (1987) Learning Together and Alone: Cooperation, Competition and Individualization. Englewood Cliffs, NJ: Prentice-Hall.

5. Johnson, David W., Roger T. Johnson, Edythe Johnson Holubec. (1986) Circles of Learning. Alexandria, VA: ASCD Publications.

6. Johnson, David W., Roger T. Johnson and Edythe Johnson Holubec. (1987) Structuring Cooperative Learning: Lesson Plans for Teachers. Available through Interaction Book Co., Edina, MN.

8. Kagan, Spencer. (1990) Cooperative Learning Resources for Teachers. 27134 Paseo Espada #202, San Juan Capistrano, CA 92675

9. Moorman, Chick and Dea Dishon. Our Classroom: We Can Learn Together. Dea Dishon Speaking, 5007 Dewey Drive, Alexandria, VA.

10. Slavin, Robert. (1985) Using Student Team Learning. Baltimore, MD: John Hopkins University.

11. Burns, Marilyn. (1987) A Collection of Math Lessons from Grades 3 through 6. The Math Solutions Publications.

12. Burns, Marilyn and Bonnie Tank. (1988) A Collection of Math Lessons from Grades 1-3. The Math Solutions Publications.

13. Davidson, Neil. (1990) Cooperative Learning in Mathematics. Addison Wesley Publishing Co., Inc., Chicago, IL.

14. (1990) Science Equals Success. WEFA Publishing Center, Education Development Center, Newton, MA.

Organizations

IASCE -- International Association for the Study of Cooperation, c/o 136 Liberty Street, Santa Cruz, CA 95060, (408) 426-7926.

MAACIE -- Mid-Atlantic Association for Cooperation in Educating, Thelma De La Grange, Ann Arundel County Public Schools, 2644 Riva Road, Annapolis, MD 21401.

Learning Centers

Cooperative Learning Center, Johnson and Johnson, 202 Pattee Hall, University of Minnesota, Minneapolis, MN 55455

Public School Administrative Center, 203 West Hillside Road, Naporville, Illinois 60540-6589.

The Johns Hopkins Team Learning Project. Center for Social Organization of School, Johns Hopkins University, 3505 North Charles Street, Baltimore, MD. 21218. (301) 338-8249.

An ERIC (Educational Resources Information Clearinghouse) search on cooperative learning in Rural/Small Schools brought up the following resources.

SilverPlatter 1.6 **ERIC (1/83 - 12/90)**

AN: ED320719
CHN: RC017563
AU: Miller,-Bruce-A.
TI: The Multigrade Classroom: A Resource Handbook for Small, Rural Schools.
CS: Northwest Regional Educational Lab., Portland, Oreg.
SP: Office of Educational Research and Improvement (ED), Washington, DC.
CN: 400-86-0006
PY: 1989
AV: Brookline Books, P.O. Box 1046, Cambridge, MA 02238 ($18.95).
NT: 279 p.
PR: EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
DT: Guides - Classroom - Teacher (052); Information Analyses - General (070)
CP: U.S.; Oregon
LA: English
PG: 279
DE: Elementary-Secondary-Education; Grouping-Instructional-Purposes; Open-Education; Peer-Teaching; Self-Directed-Groups; Teacher-Effectiveness; Teaching-Methods
DE: *Class-Organization; *Classroom-Techniques; ***Cooperative-Learning**; *Multigraded-Classes; ***Rural-Schools**; ***Small-Schools**
IS: RIENOV90
AB: This handbook was written to review current research on multigrade instruction, to identify key issues faced by multigrade classroom teachers, and to offer novice teachers a set of resource guides for improving instructional quality. The first chapter reviews previous research on multigrade instruction. It addresses questions regarding the effect of multigrade instruction on student performance and the training needed to teach in a multigrade classroom. The other chapters of the handbook cover topic areas considered essential for effective multigrade instruction: (1) classroom organization; (2) classroom management and discipline; (3) instructional organization and curriculum; (4) instrucational delivery and grouping; (5) self-directed learning; and (6) planning and using peer tutoring. Each chapter presents background information, basic concepts and principles, sample schedules, classroom layouts, instructional strategies, and further resources for multigrade teaching. Each chapter contains a list of pertinent references, which together amount to approximately 100 entries. (TES)
LV: 2
CH: RC
FI: ED
DTN: 052; 070

AN: ED319598
CHN: SE051408
AU: Jones,-Gail
TI: Cognitive Conflict and Cooperative Learning.
PY: 1990
NT: 13 p.; Paper presented at the Annual Meeting of the National Association for Research in Science Teaching (63rd, Atlanta, GA, April 8-11, 1990).
PR: EDRS Price - MF01/PC01 Plus Postage.
DT: Reports - Research (143); Speeches /Meeting Papers (150)
CP: U.S.; North-Carolina
Teachers; Researchers; Practitioners
English
PG: 13
DE: Cognitive-Processes; Cognitive-Structures; Elementary-Education; Laboratory-Experiments; Laboratory-Procedures; Physics-; **Rural-Schools**
DE: *Cognitive-Dissonance; *Concept-Teaching; ***Cooperative-Learning**; *Elementary-School-Science; *Misconceptions-; *Science-Instruction; *Temperature-

IS: RIEOCT90
AB: This study compared the effects of cooperative learning groups to traditional instruction in remediating students' misconceptions about temperature. Students from grades 3, 4, and 5 in two rural elementary schools participated in the study. Students completed a pretest, a cognitive conflict laboratory activity and a posttest that measured qualitative and quantitative aspects of their understanding of temperature. The control group completed the activity in traditional dyads and the experimental group completed the activity in cooperative learning groups composed of four students. The experimental group was given laboratory worksheets that asked the group to first solve a qualitative problem and the quantitative problems that referred to the same type of measurement to create cognitive conflict between the two representational systems related to temperature. Students were asked to compare their answers on the two problems. If their answers conflicted, they were told to decide which answer was correct and to carry out an experiment to prove their answer. No directions were given for control group students on the predictions or results, but they were asked to answer the questions on the laboratory activity sheet together. The results indicated that the conflict training was effective in changing students' concepts of temperature, but the cooperative learning groups were no more effective than the traditional dyads. (YP)
LV: 1
CH: SE
FI: ED
DTN: 143; 150

3 of 3

AN: EJ397457
CHN: CE520792
AU: Smith-Davis,-Judy
TI: The Rural Education Gold Mine.
PY: 1989
JN: Educational-Considerations; v17 n1 p3-8 Fall 1989
NT: Available from College of Education, Kansas State University, Manhattan, KS 66506.
DT: Journal Articles (080); Opinion Papers (120)
LA: English
DE: Networks-; Secondary-Education; Student-Organizations
DE: *Cooperative-Learning; *Disabilities-; *Peer-Teaching; *Rural-Education
IS: CIJMAR90
AB: The purpose of this article is to encourage teachers, principals, therapists, and others in rural education to recognize and share the gold mine of solutions and successes they can offer and to begin by developing networks through which they can share their practices and solutions. (Author)
CH: CE
FI: EJ
DTN: 080; 120